

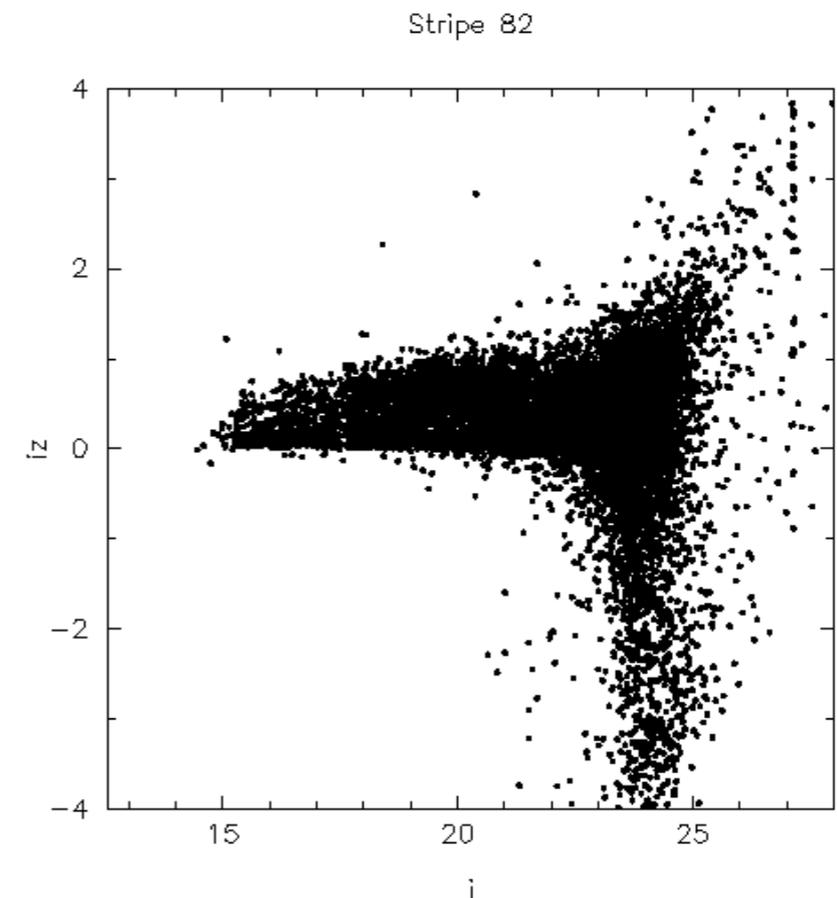
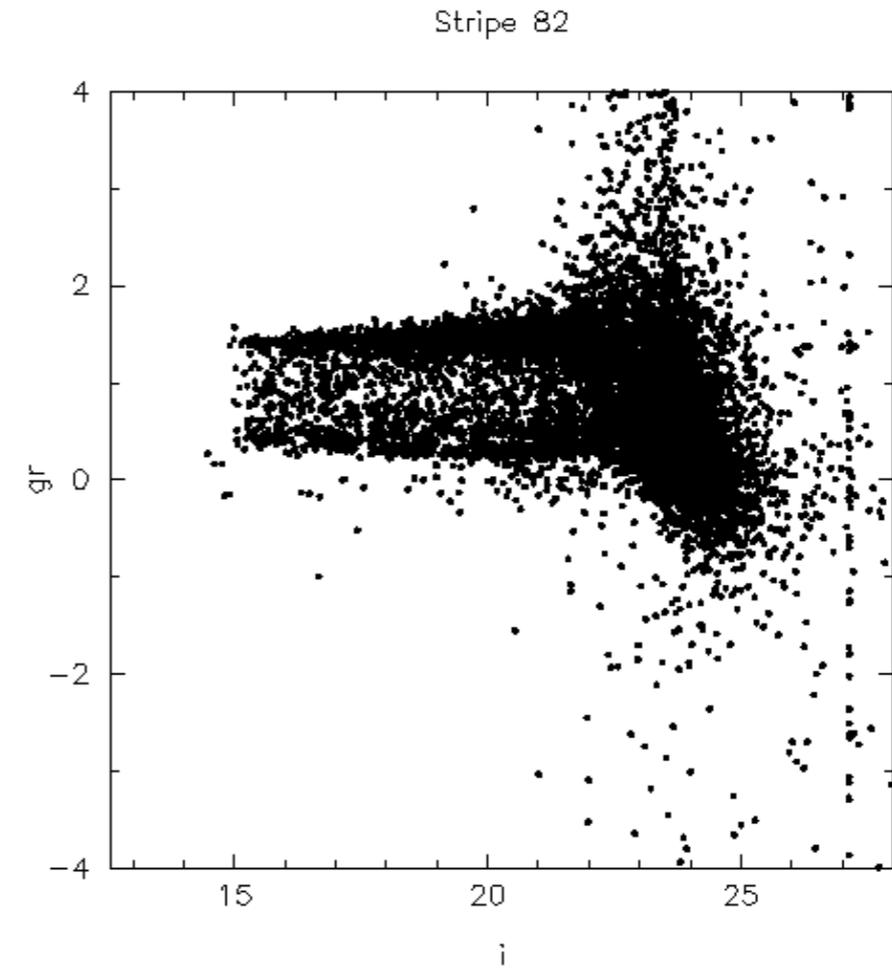
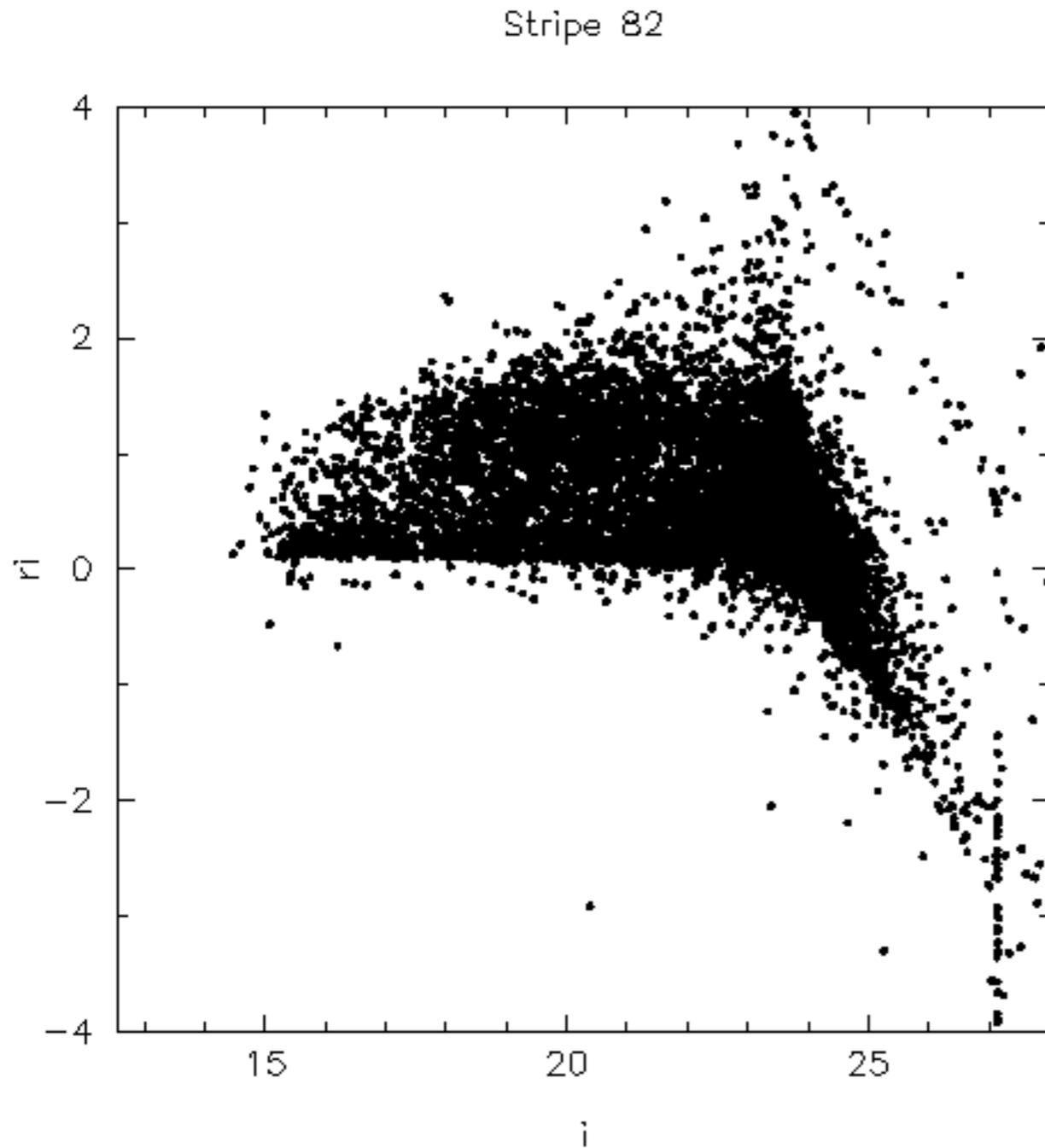
Data Analysis of Data Challenge 4

James Annis
Center for Particle Astrophysics
Fermi National Accelerator Laboratory



DARK ENERGY SURVEY

Stars in Stripe 82



The SDSS coadd on stripe 82 is comparable to DES, except in z.



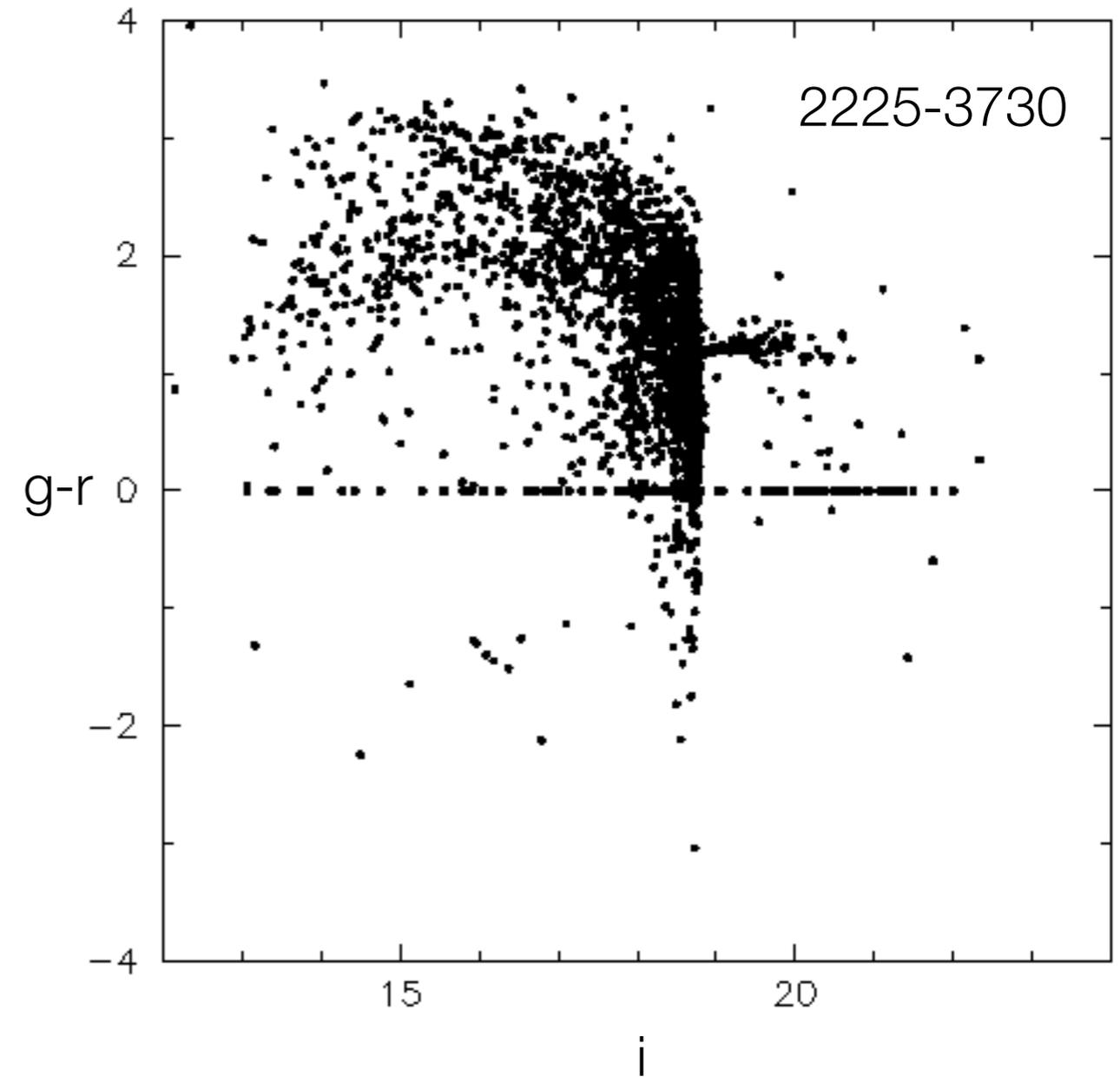
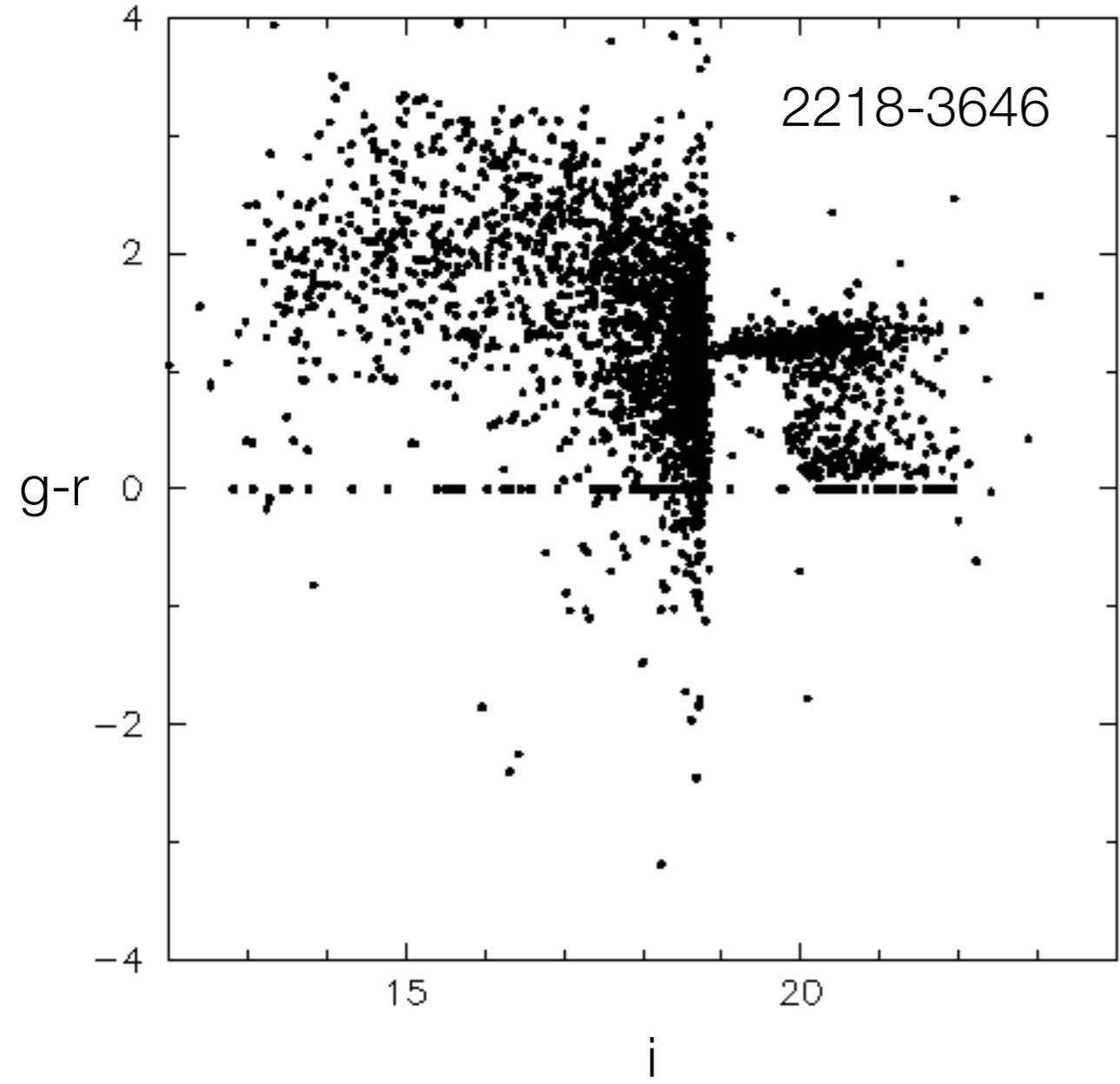
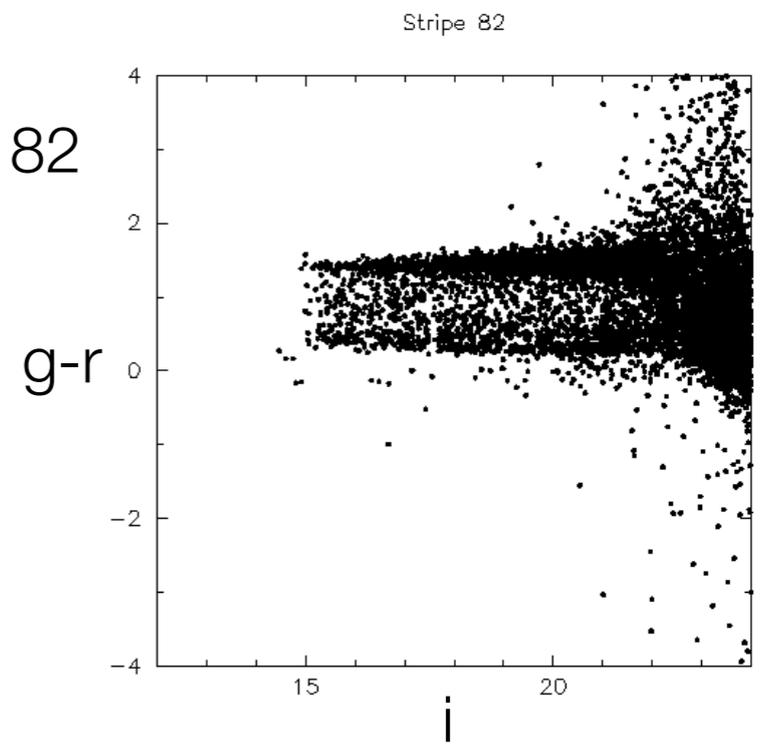
The universe in the simulation

Stars at $i < 19$ are from USNO-B and the scatter in the colors reflects the photometric scatter in the USNO-B catalog.

Stars at $i > 19$ are from the Besacon model and use Besacon SDSS colors.

The ridge at $g-r=0$ consists of object detected neither in g or r .

SDSS Stripe 82

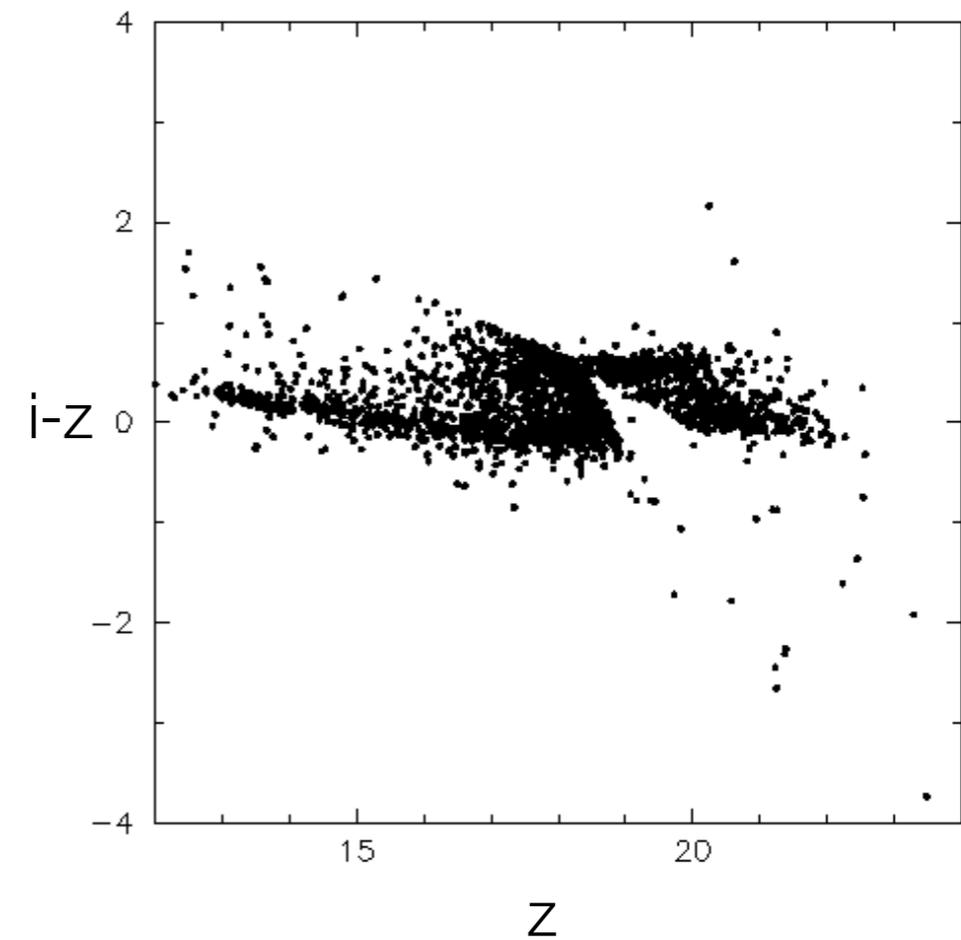
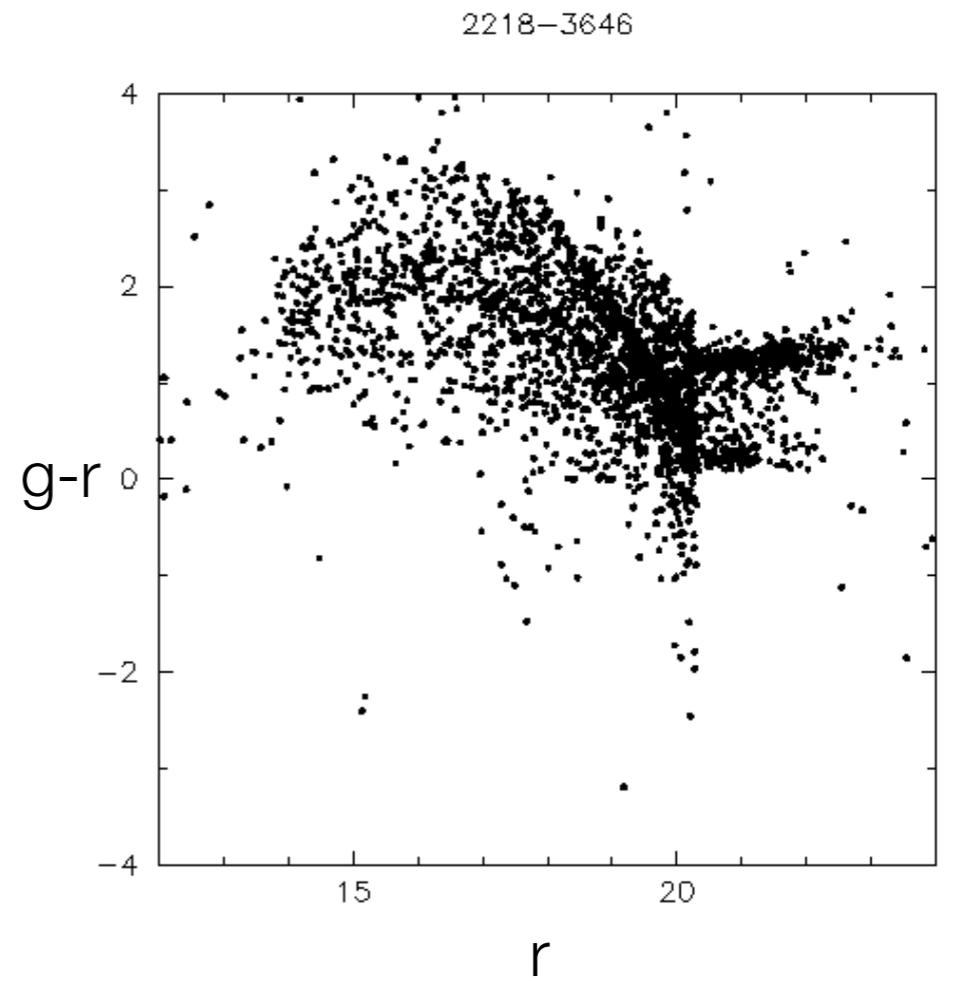
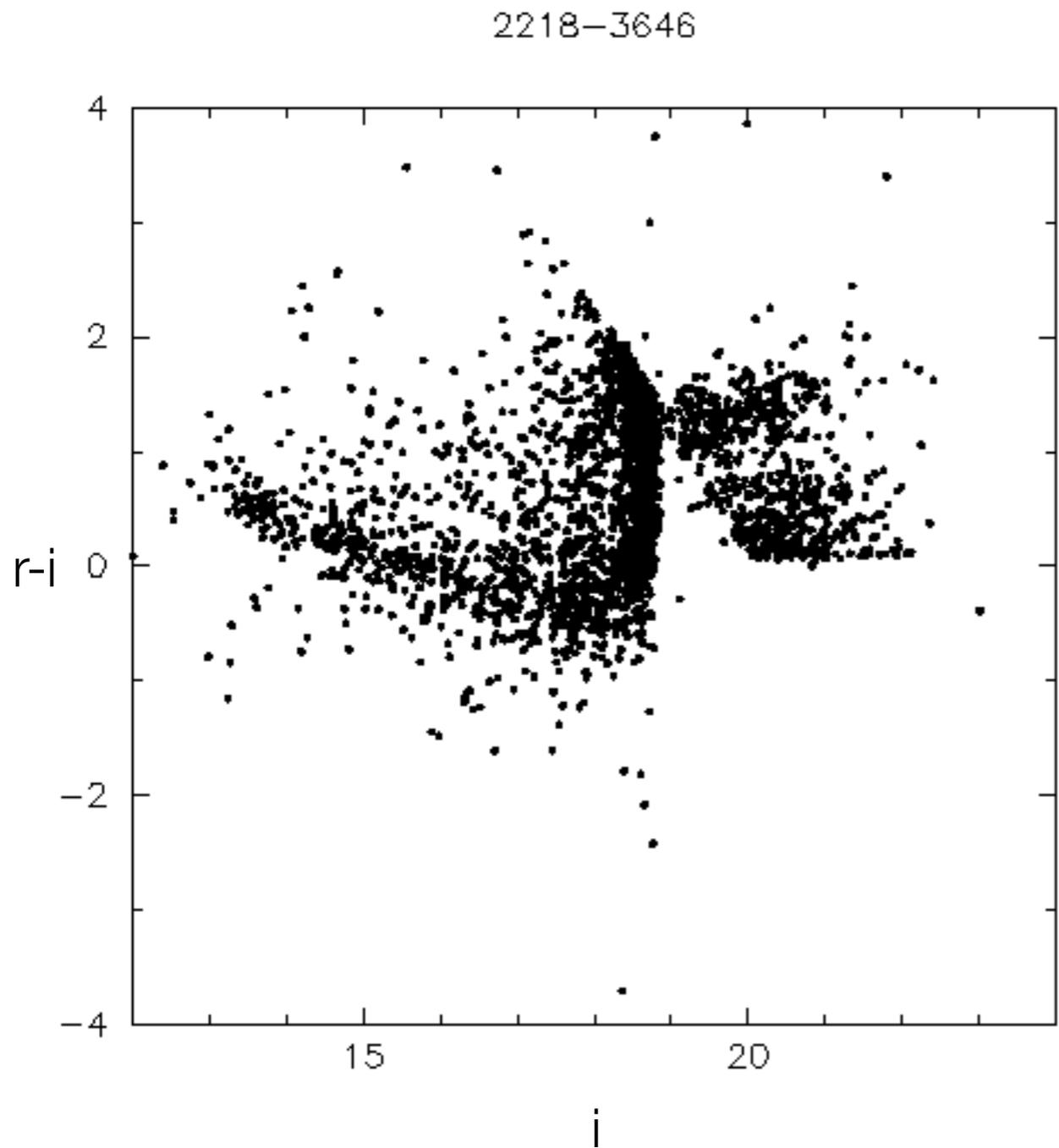




DARK ENERGY SURVEY

Stars in 2218-3646

This universe looks strange in the color-magnitude diagrams.





DARK ENERGY SURVEY

Note- *map_apers* run from 0 to 5.

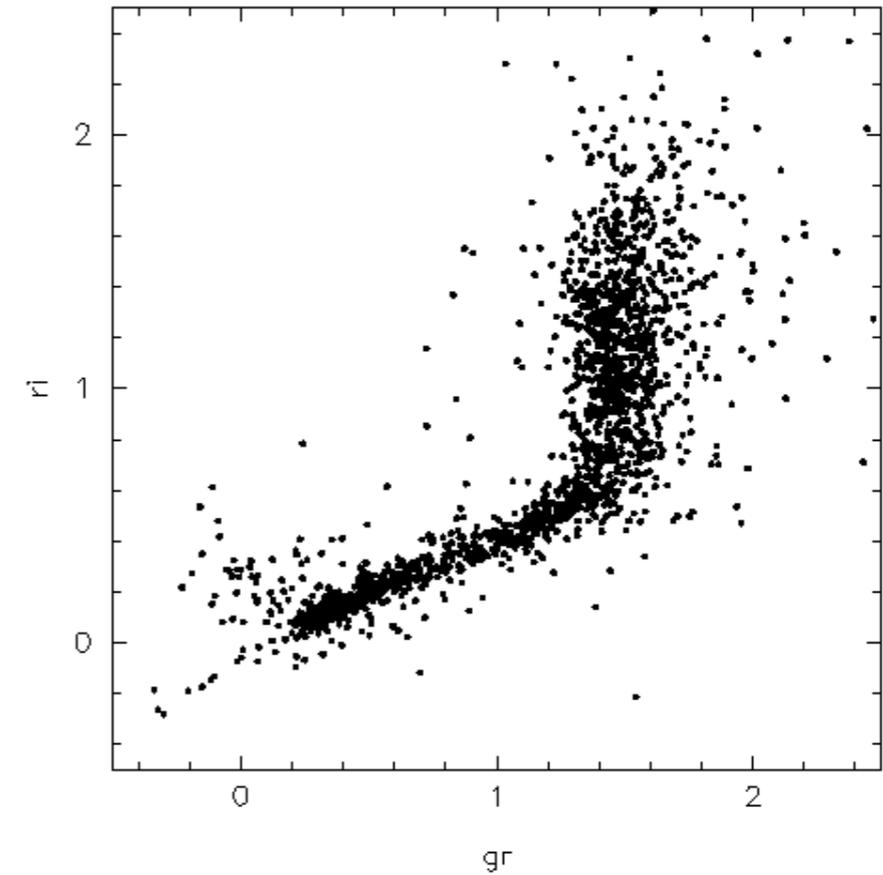
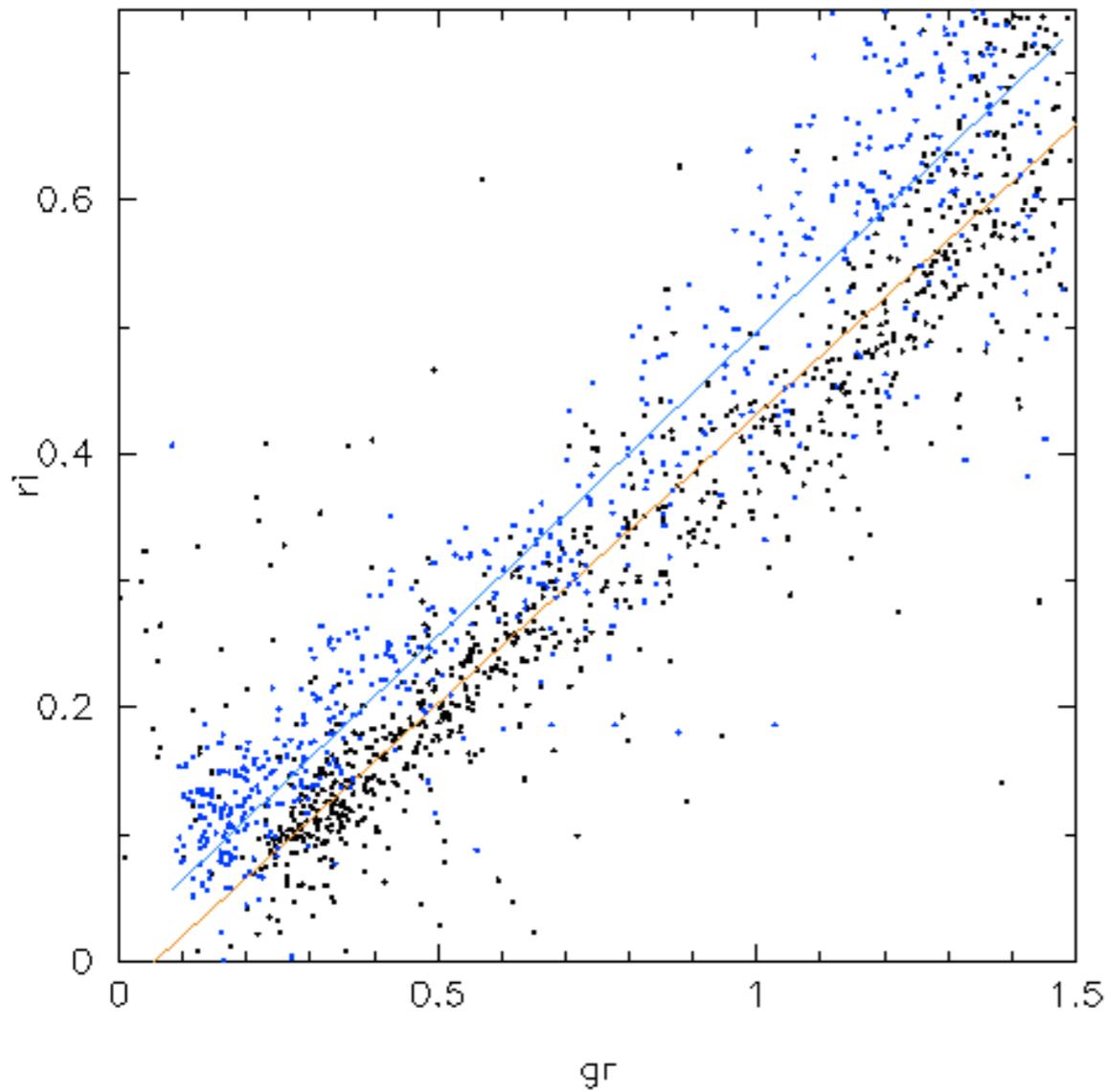
Stripe82 $20 \leq i < 22$

Stellar locus: $g-r/r-i$ *mag_aper<2>*

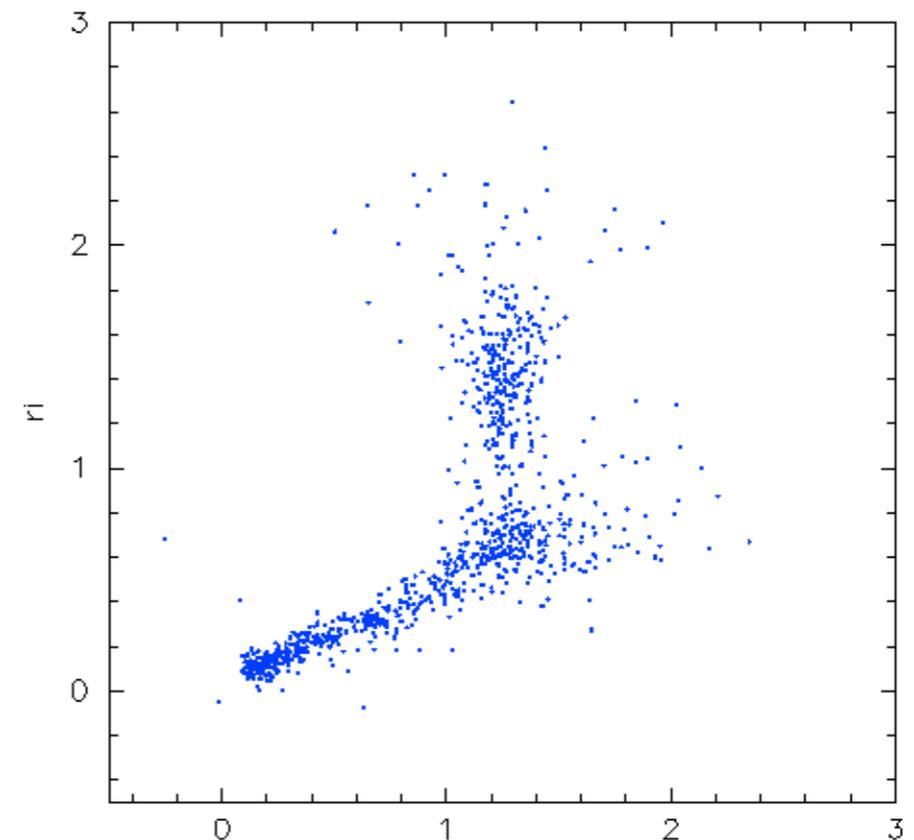
The sigma-clipped mean, sigma about the SDSS data at $20 \leq i < 22$ and $0 \leq g-r < 1.5$ and $0 \leq r-i < 0.75$:

mean = -0.00421

$\sigma = 0.054$



2218-3646 $20 \leq i < 22$





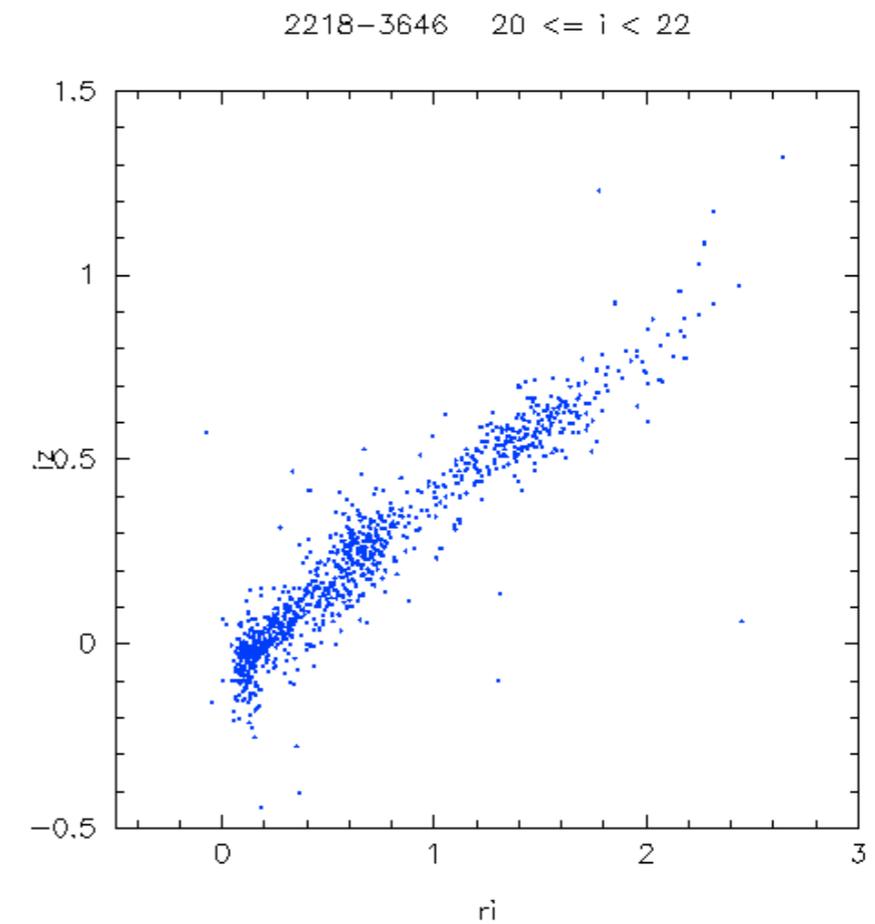
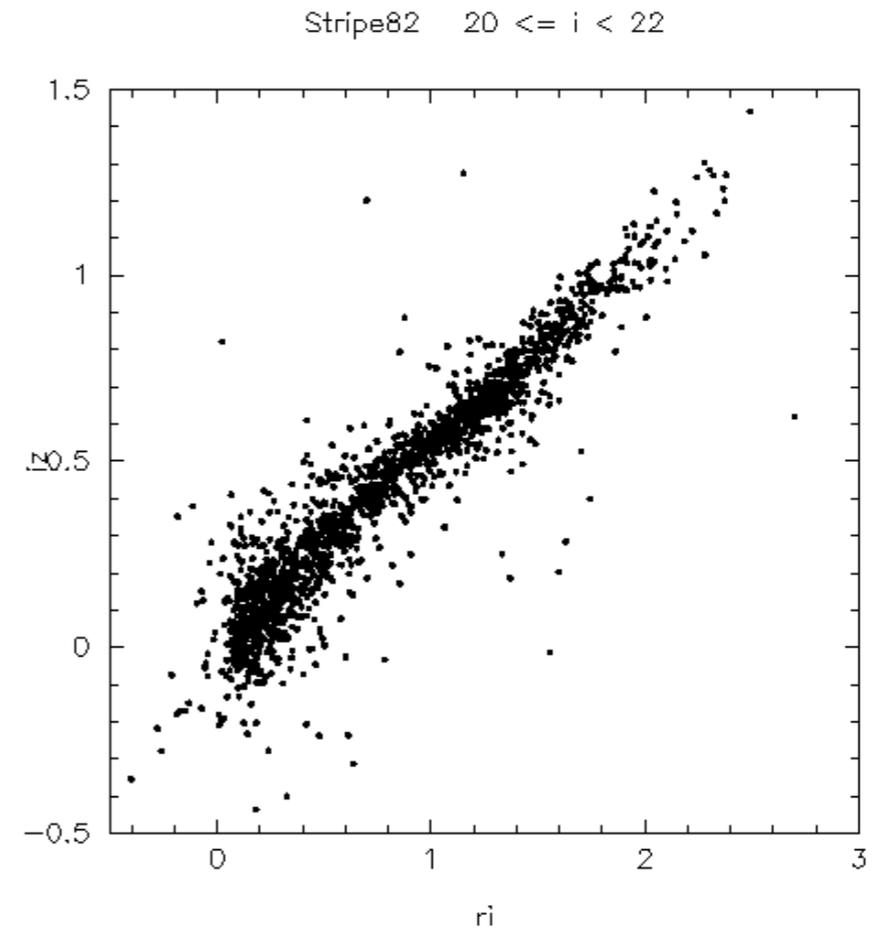
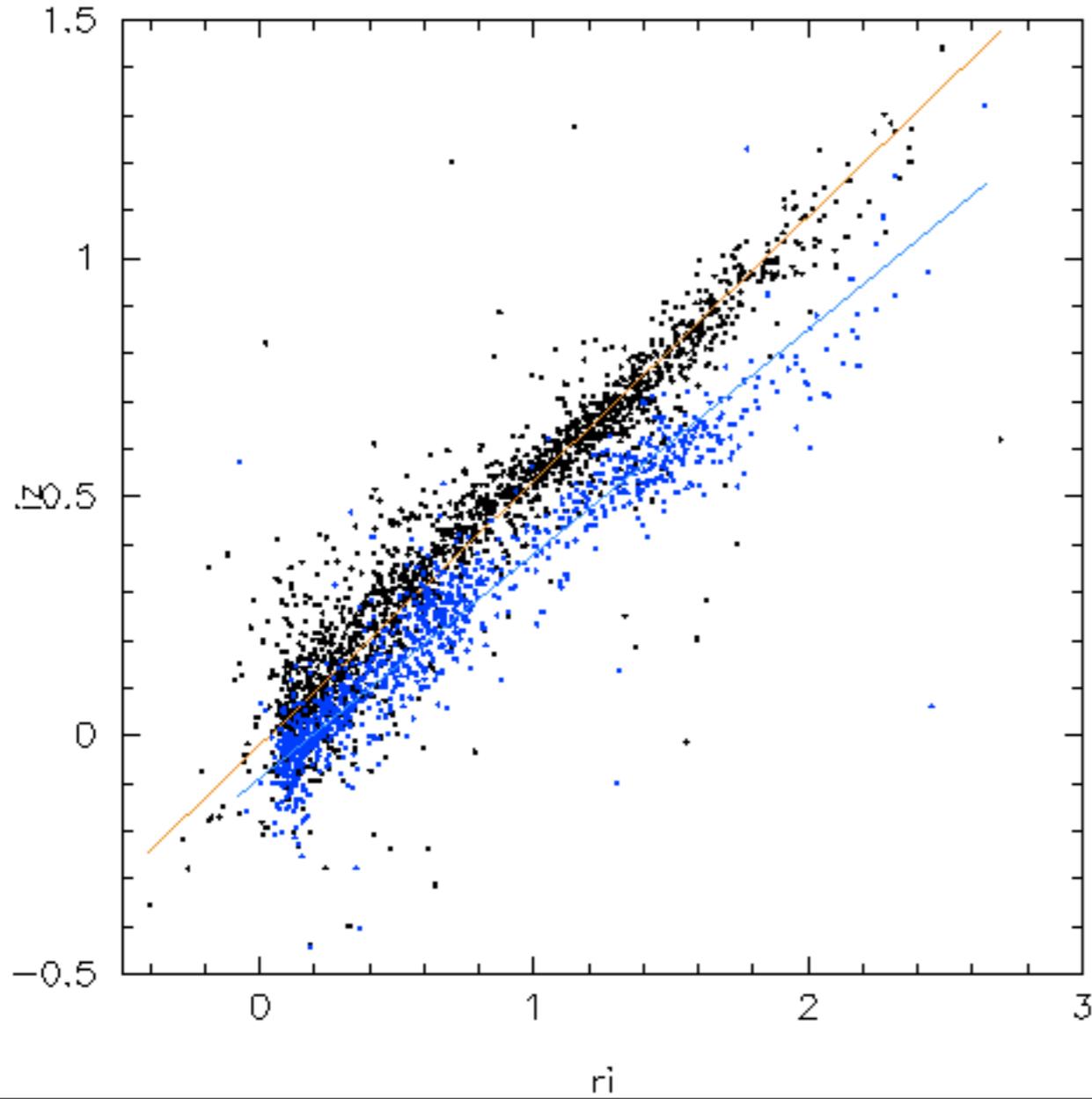
DARK ENERGY SURVEY

Stellar locus: $r-i/i-z$ *mag_aper<2>*

The sigma-clipped mean, sigma about the SDSS data at $20 \leq i < 22$ and $0 \leq r-i < 3.0$ and $-0.5 \leq i-z < 1.5$:

mean = 0.00125

$\sigma = 0.071$

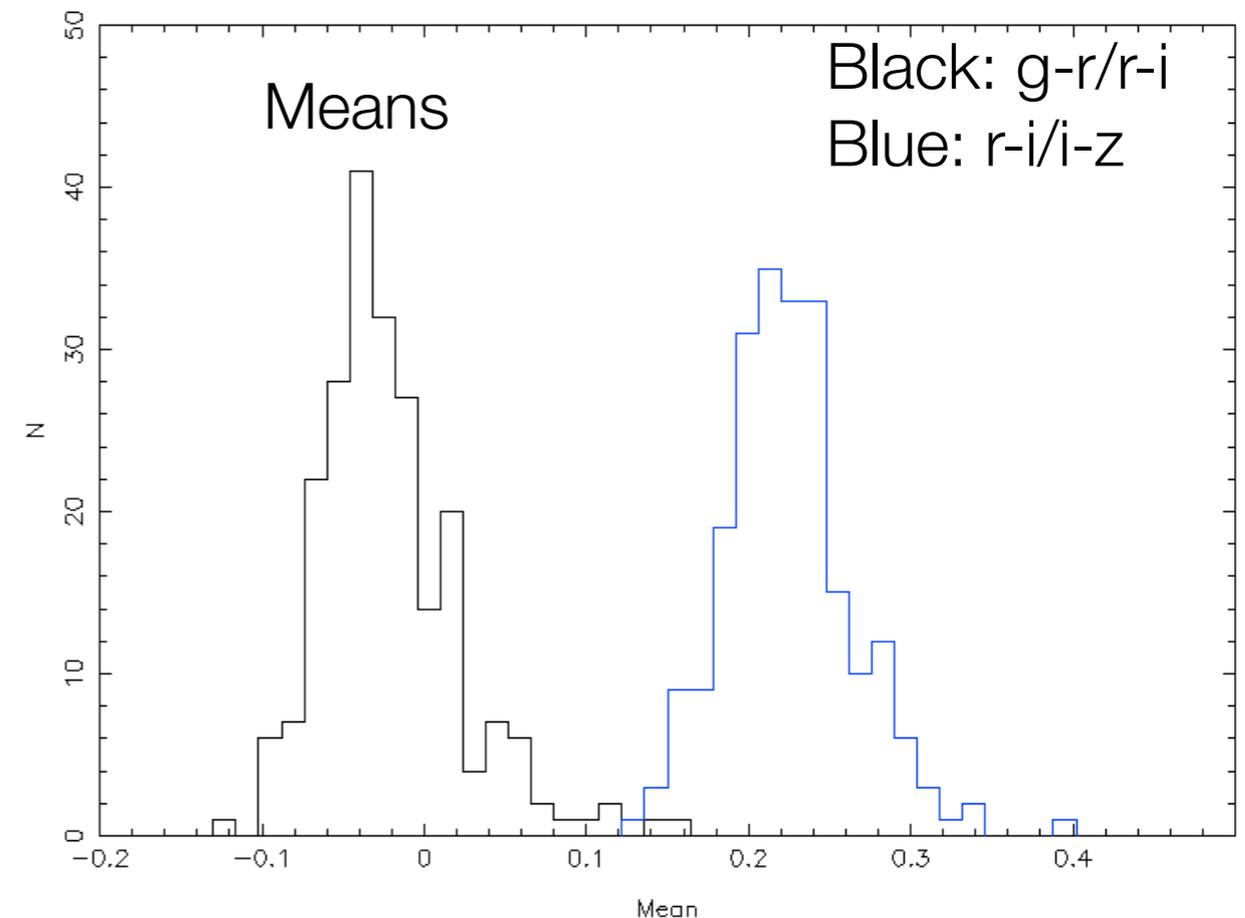
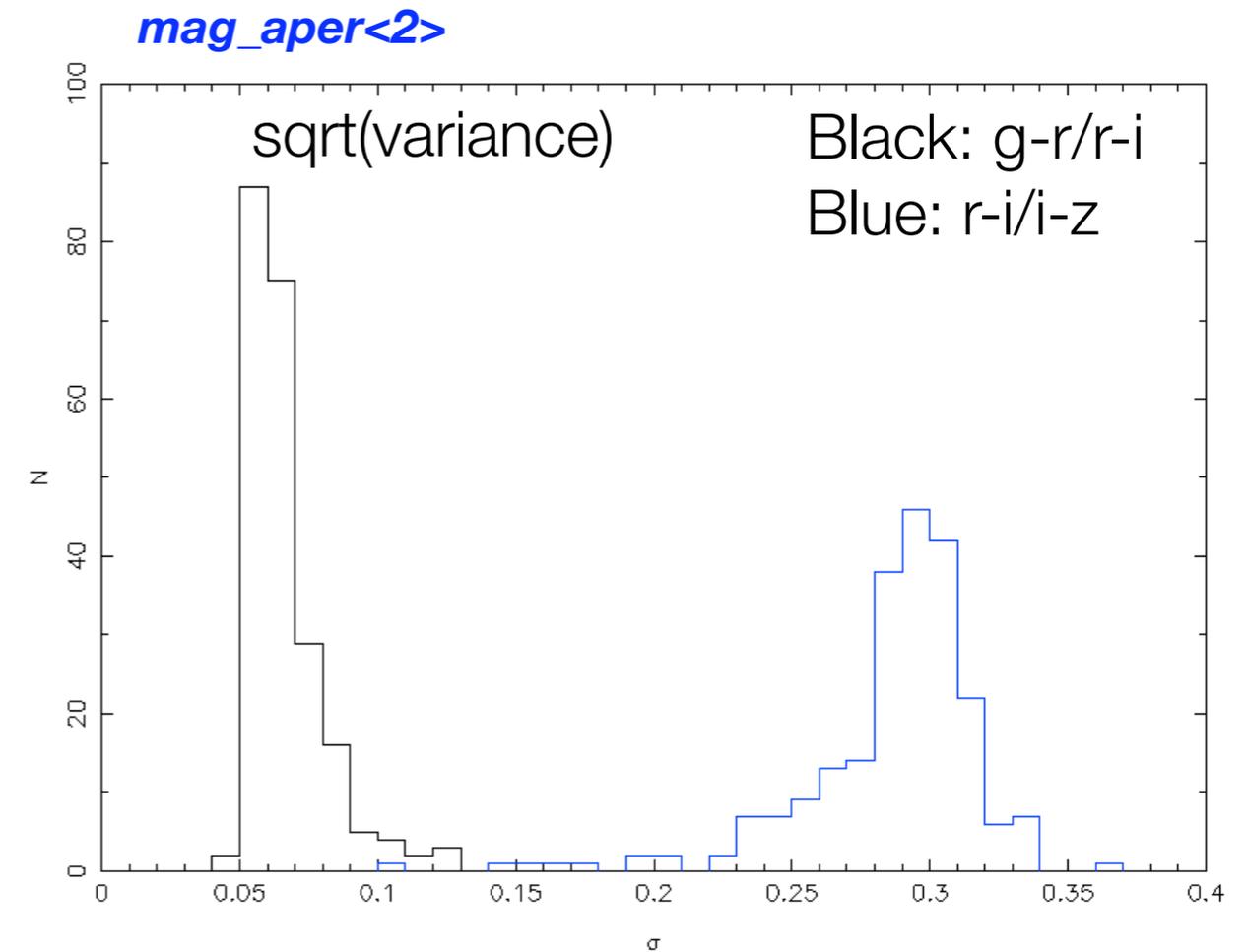




DARK ENERGY
SURVEY

Statistics of the stellar loci

1. 223 tiles measured relative to fiducial fit.
2. The mean of the variance about the fit is measurement scatter, both instrumental and software.
 - mean $g-r/r-i$ $\sigma = 0.067$
 - mean $r-i/i-z$ $\sigma = 0.29$
3. The variance of the means is the calibration scatter.
 - $\sigma(g-r/r-i) = 0.043$
 - $\sigma(r-i/i-z) = 0.040$

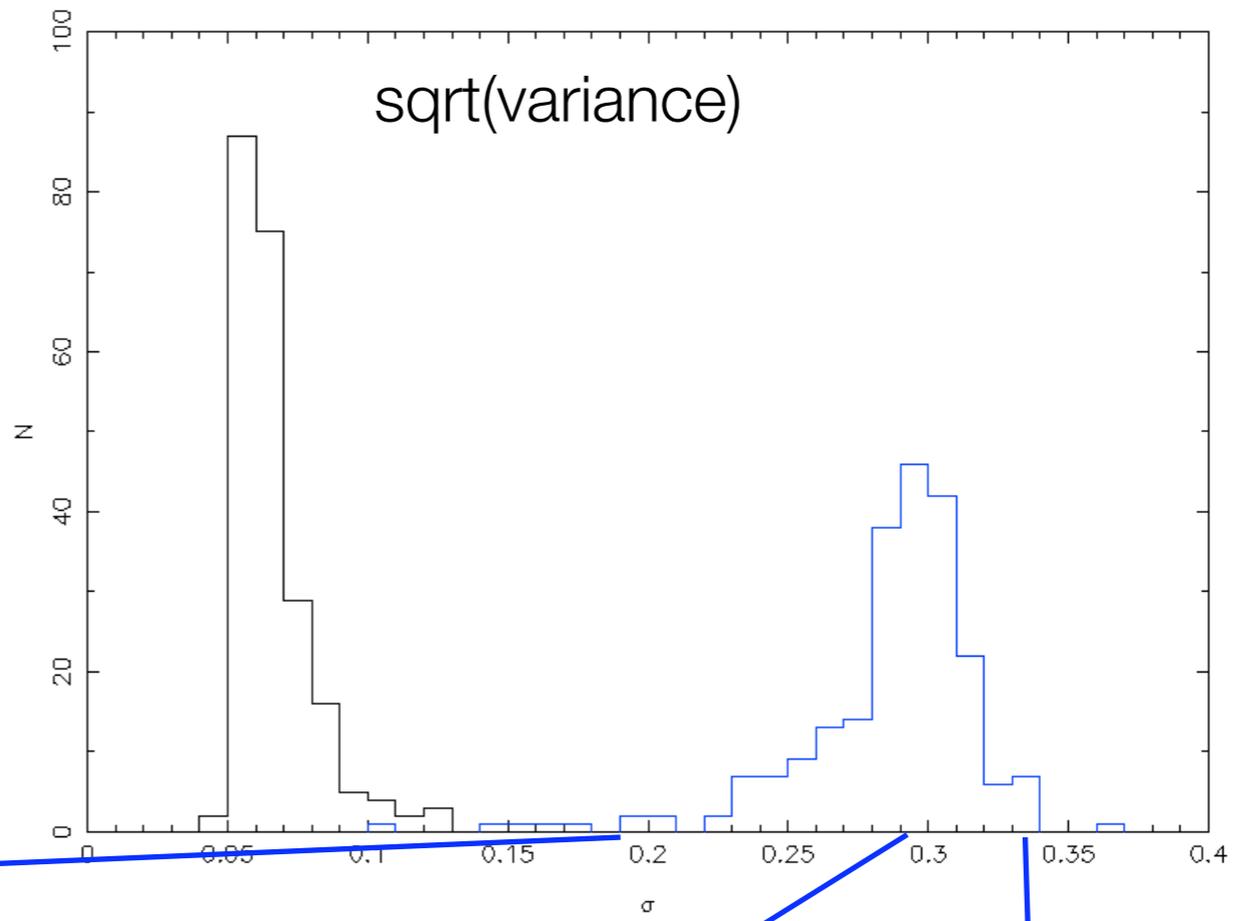
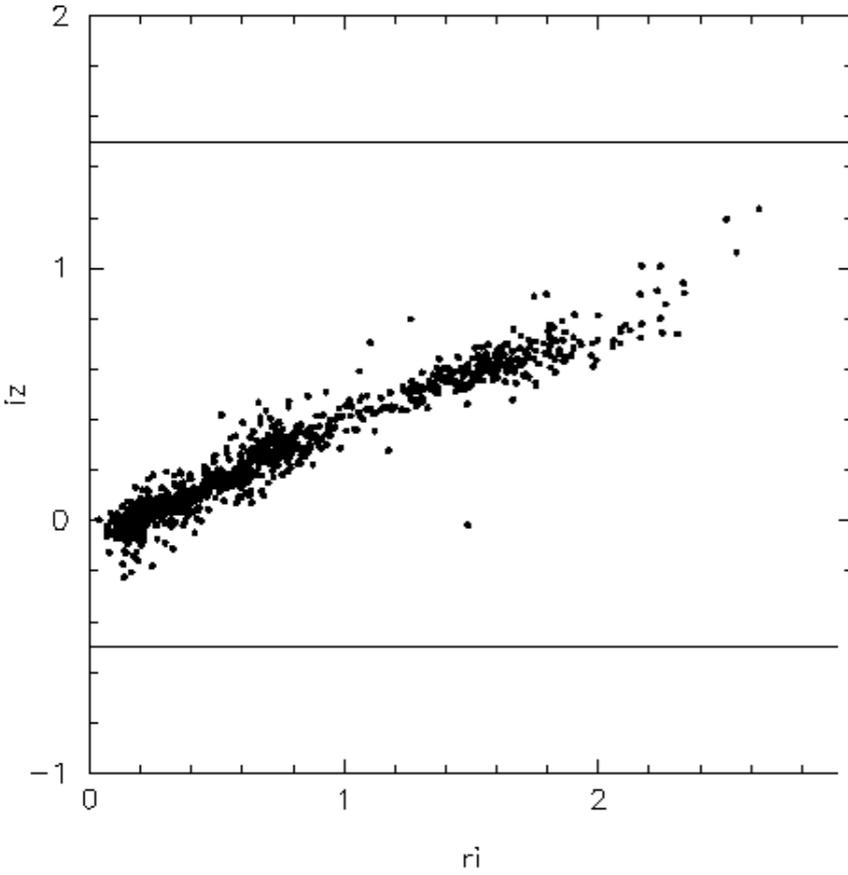




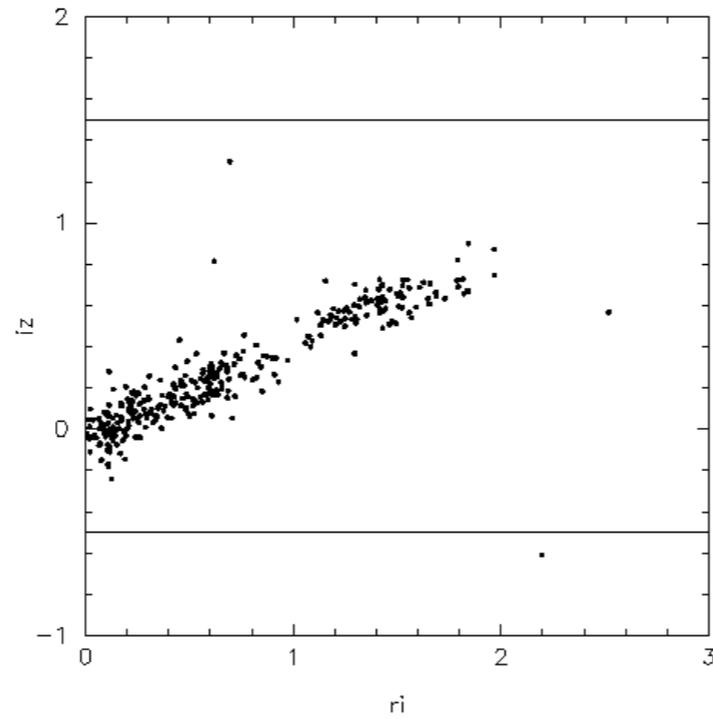
DARK ENERGY SURVEY

Variance: noise

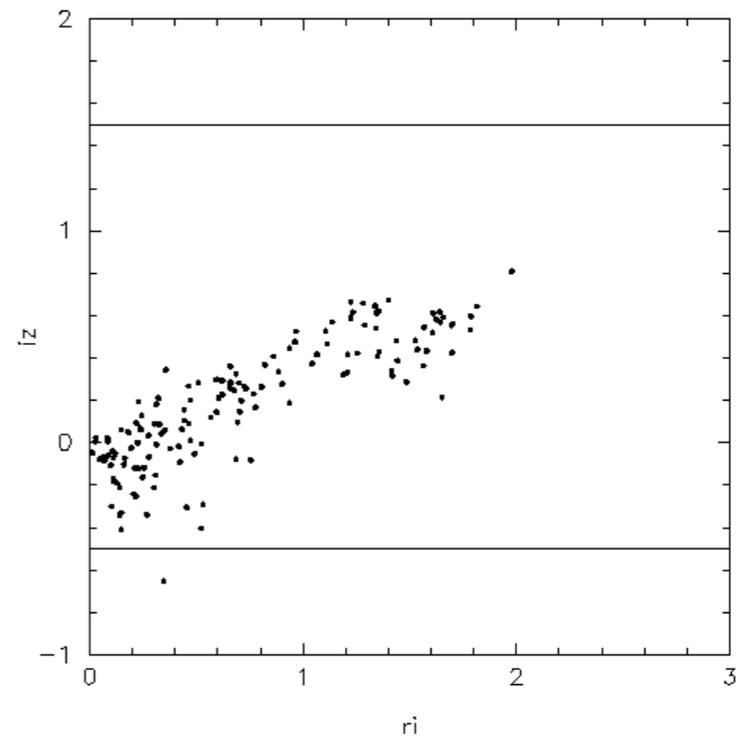
2227-4147 $20 \leq i < 22$



2236-3646 $20 \leq i < 22$



2205-4021 $20 \leq i < 22$

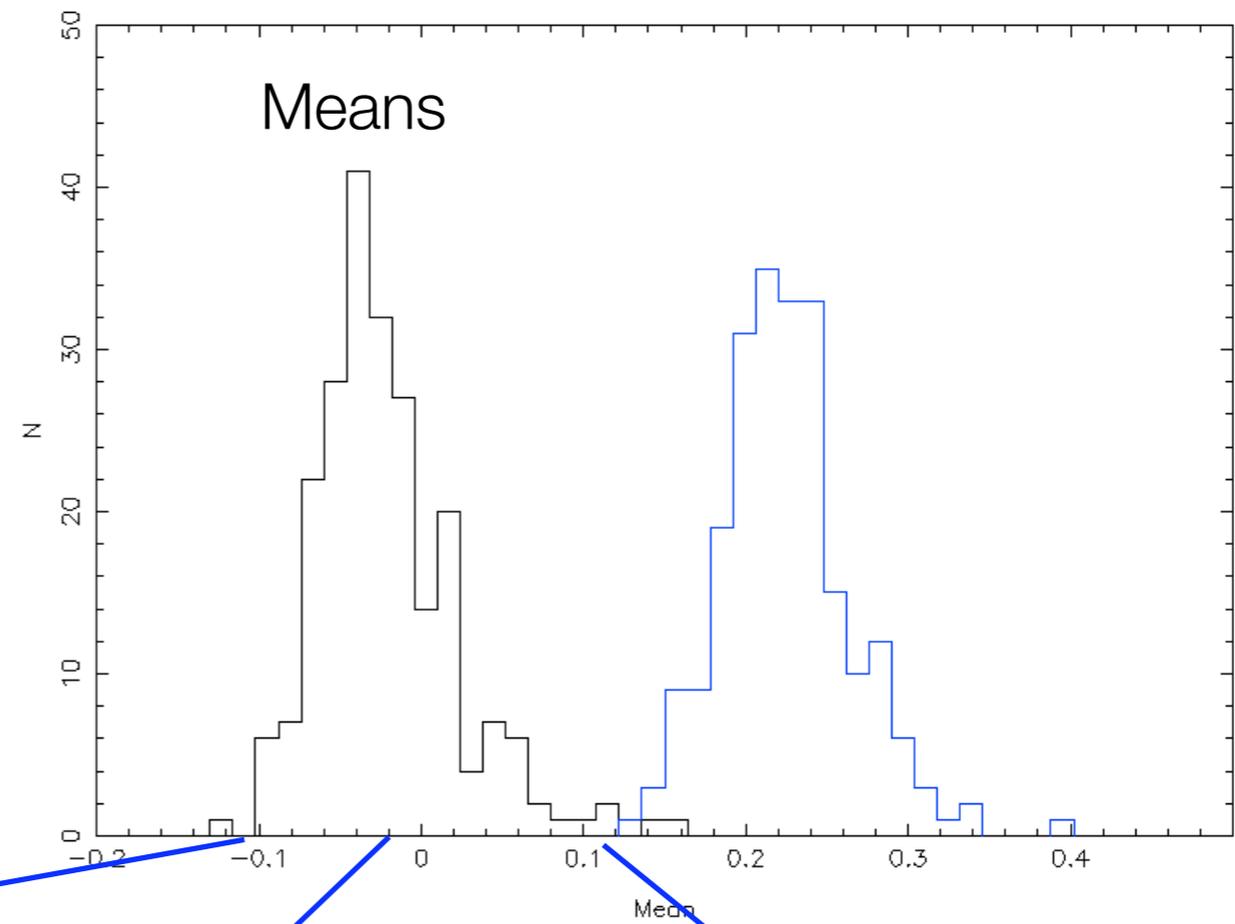
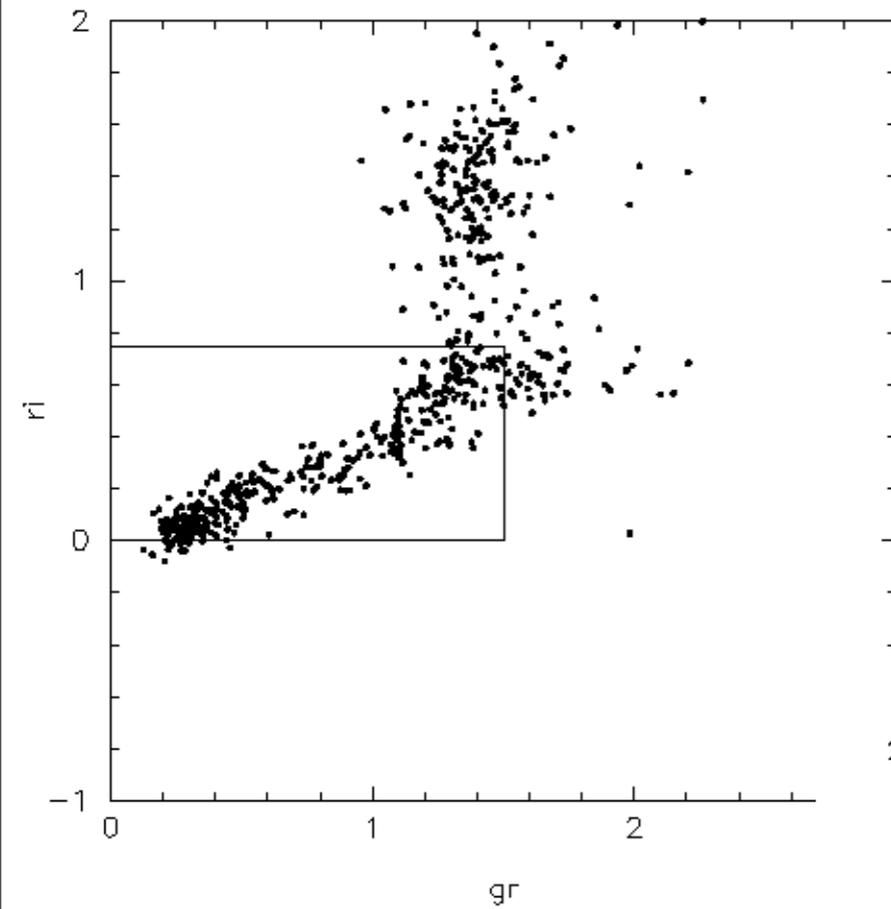




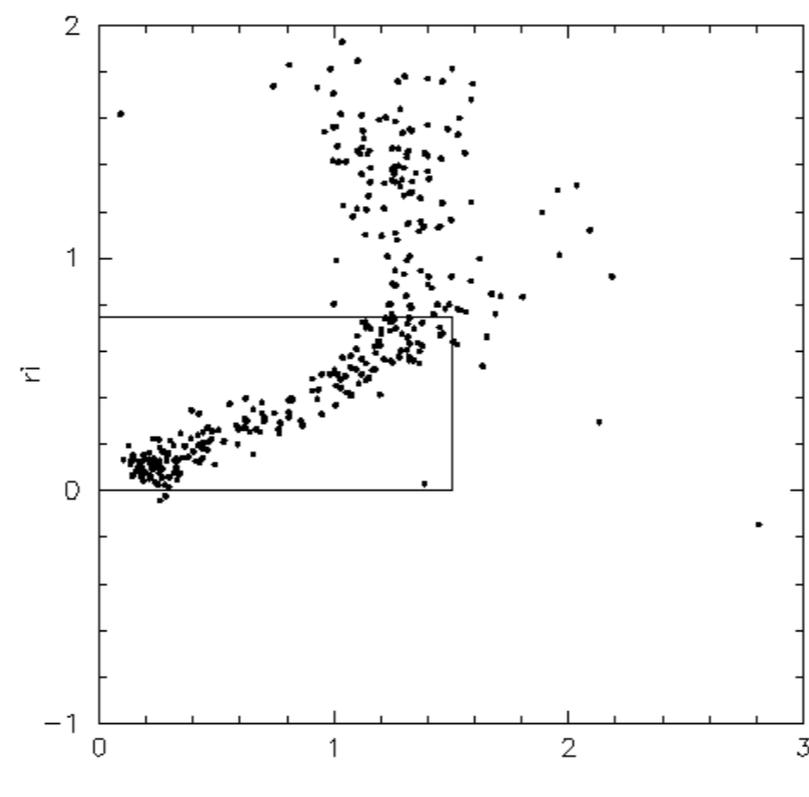
DARK ENERGY SURVEY

Means: calibration

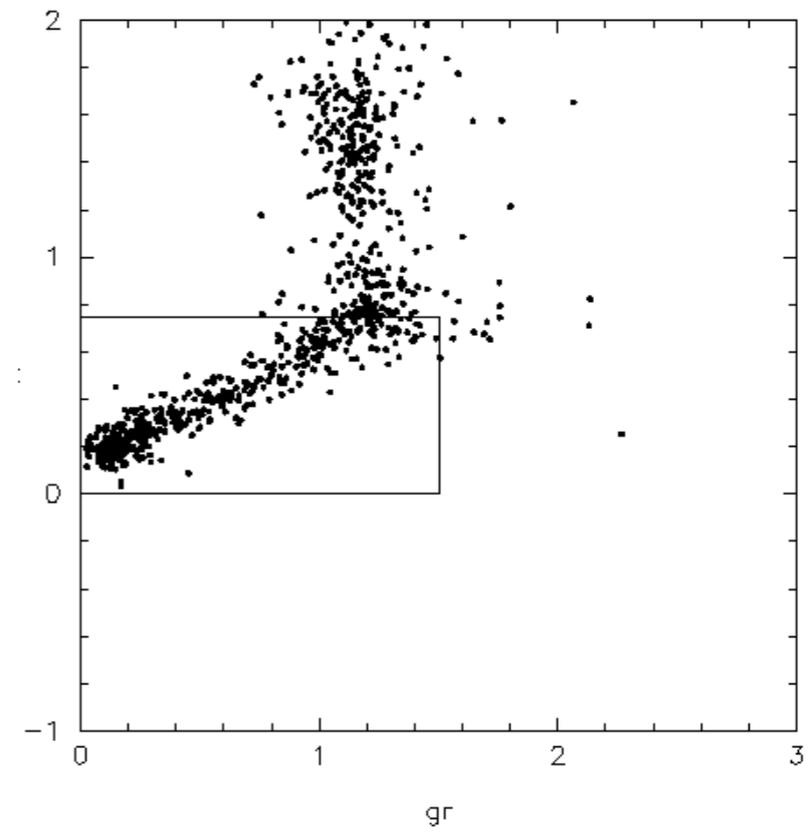
2209-4021 20 <= i < 22



2222-4357 20 <= i < 22



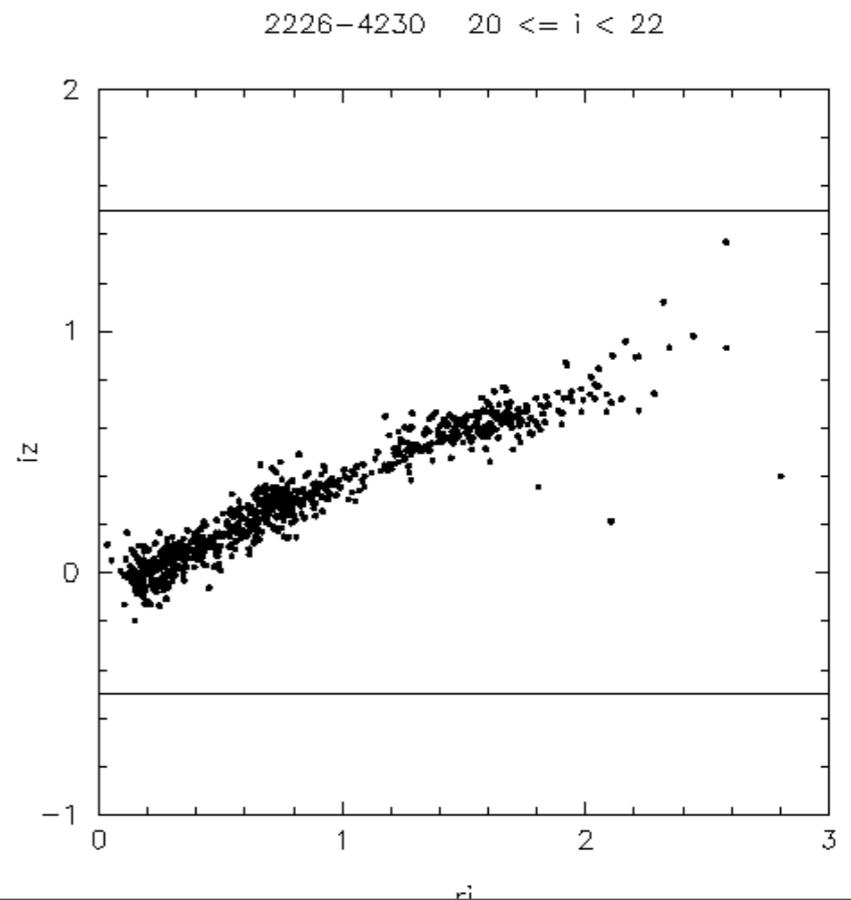
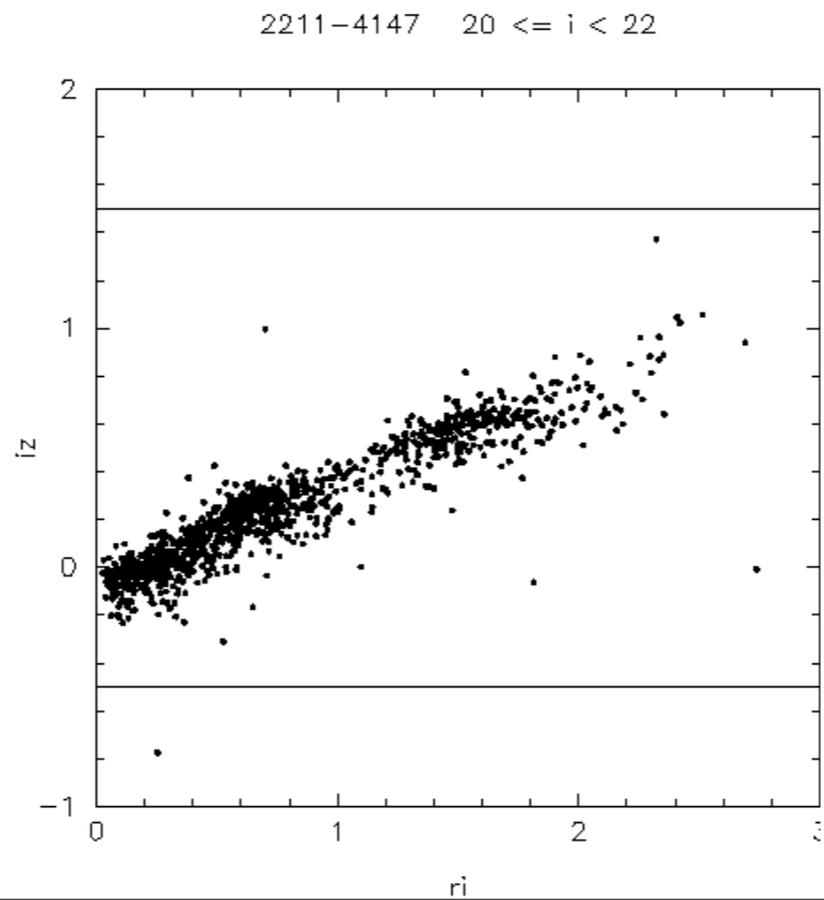
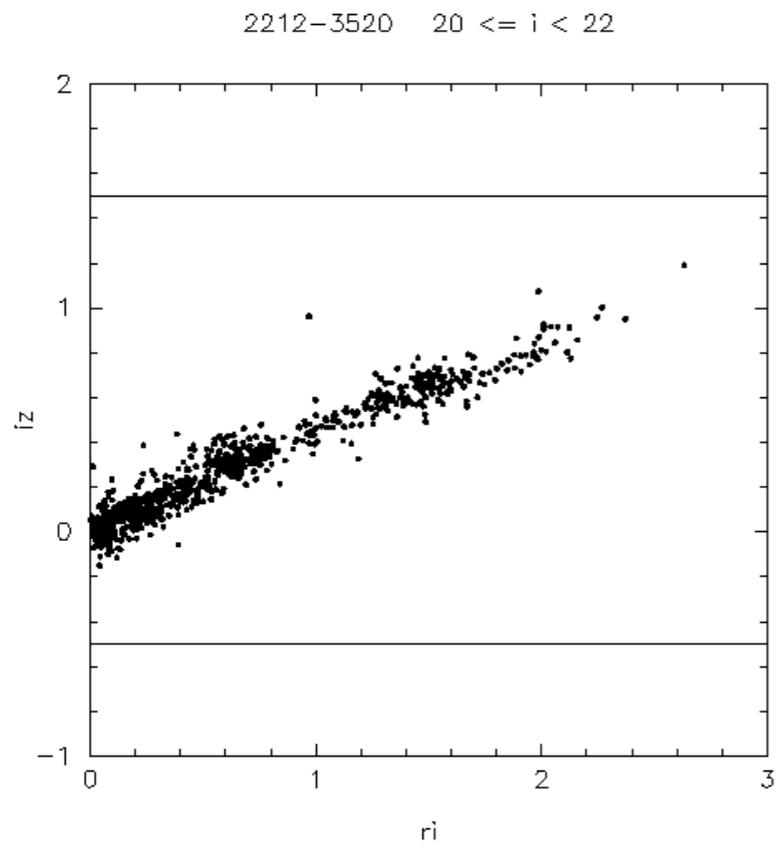
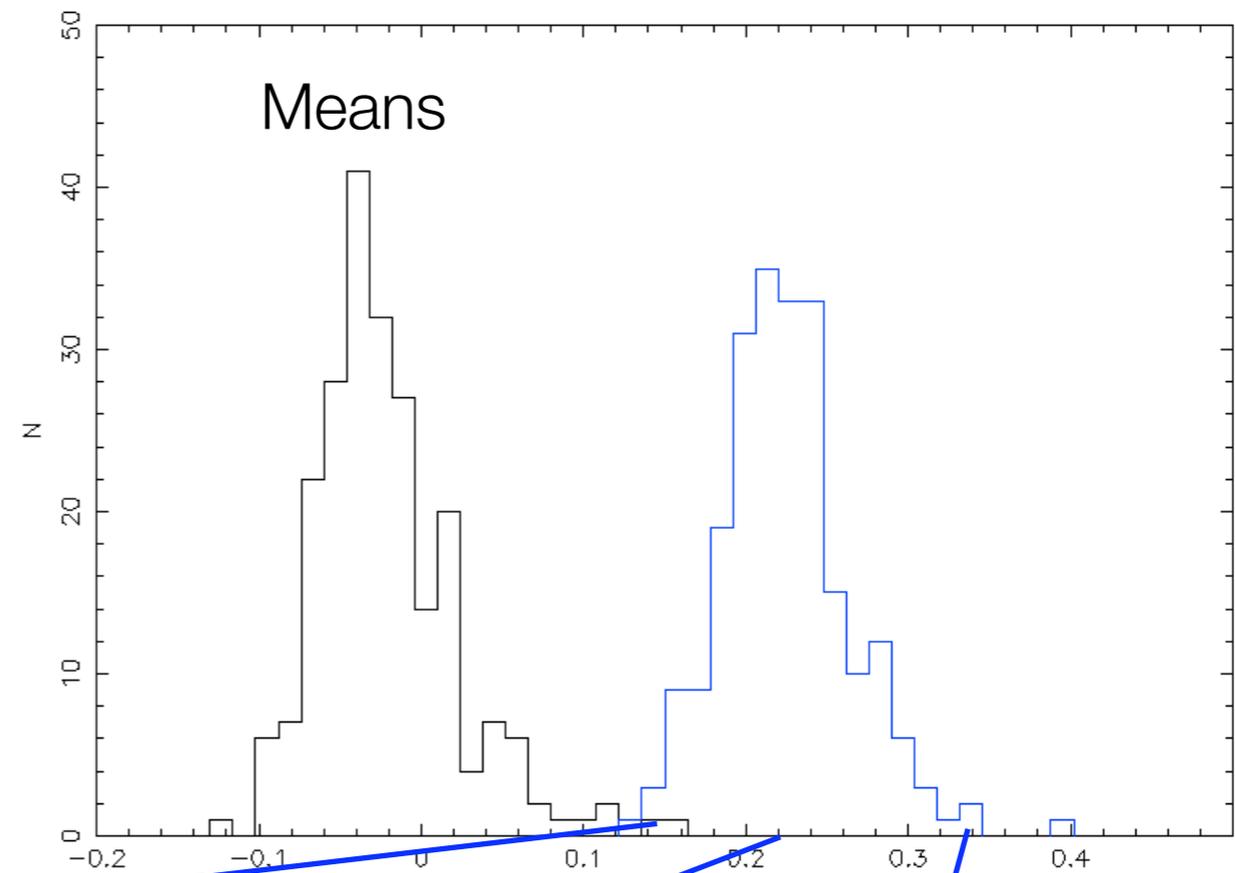
2226-4230 20 <= i < 22





DARK ENERGY SURVEY

Means: calibration





DARK ENERGY SURVEY

Note- *map_apers* run from 0 to 5.

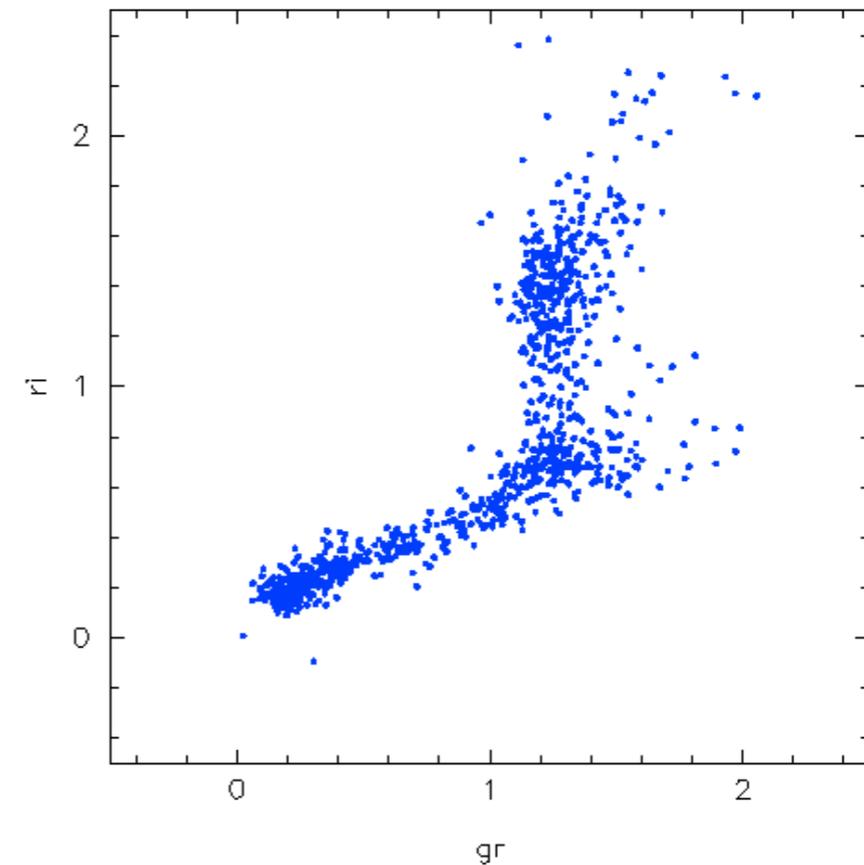
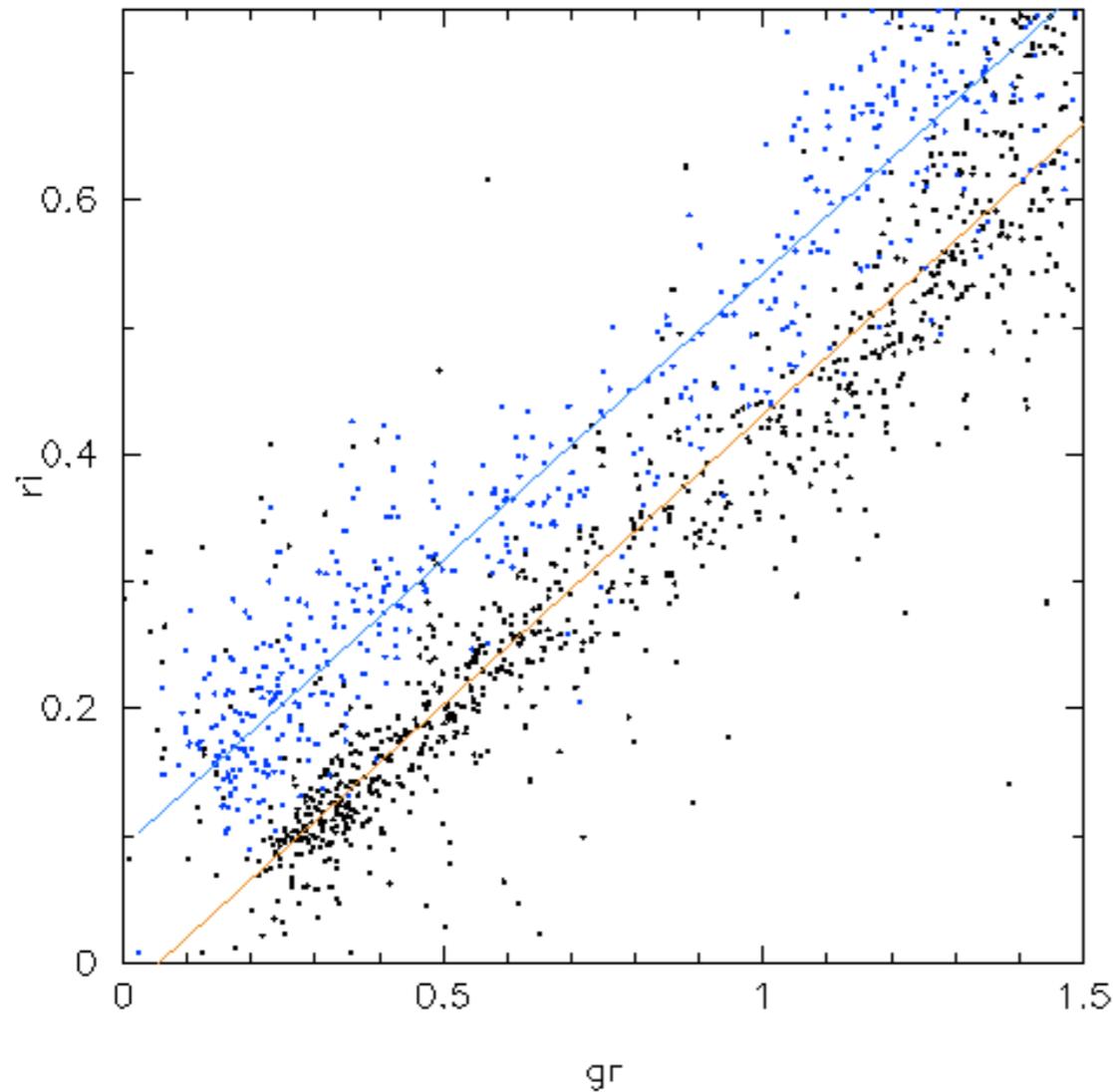
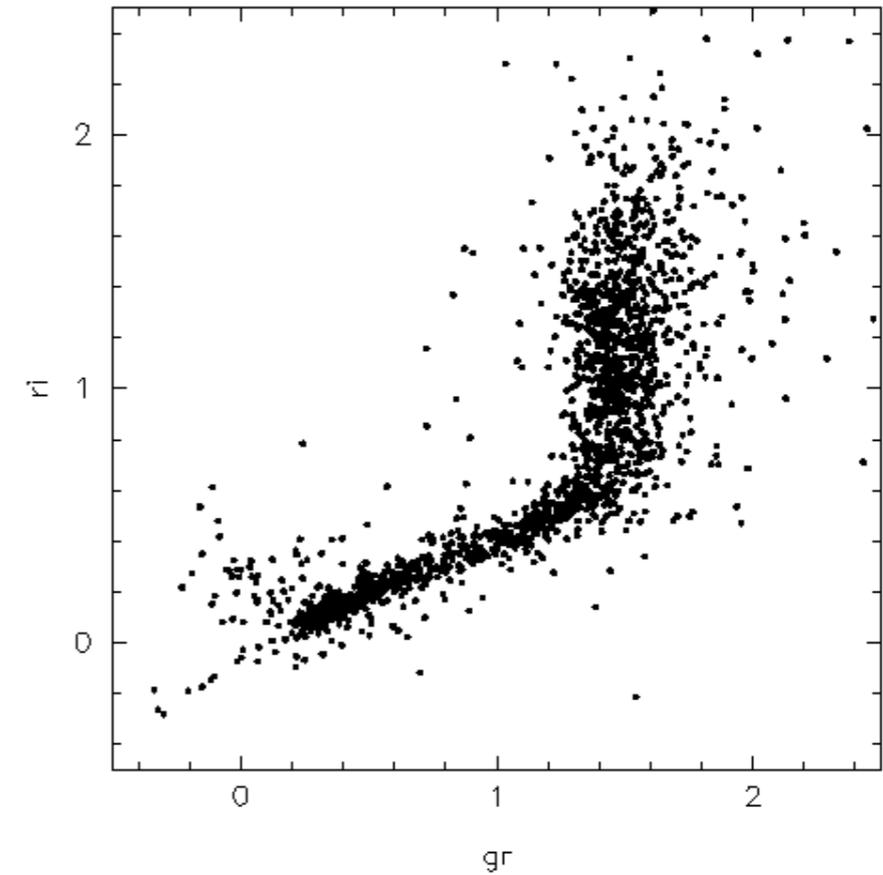
Stripe82 $20 \leq i < 22$

Stellar locus: $g-r/r-i$ *mag_aper<0>*

The sigma-clipped mean, sigma about the SDSS data at $20 \leq i < 22$ and $0 \leq g-r < 1.5$ and $0 \leq r-i < 0.75$:

mean = -0.00421

$\sigma = 0.054$





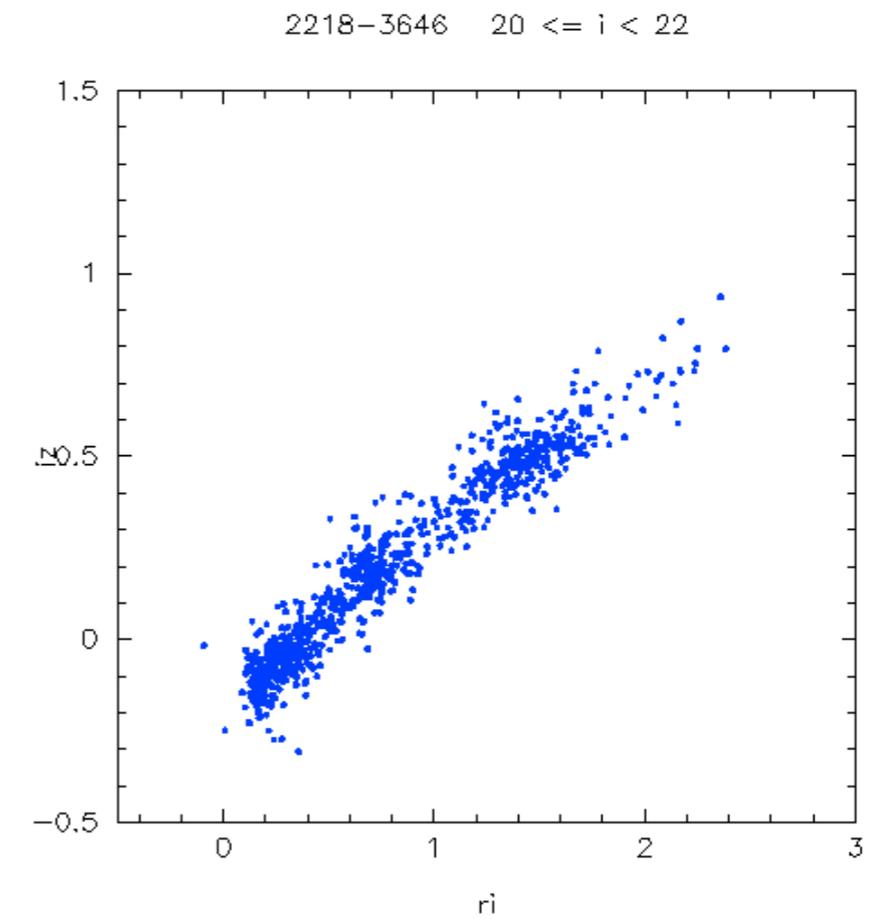
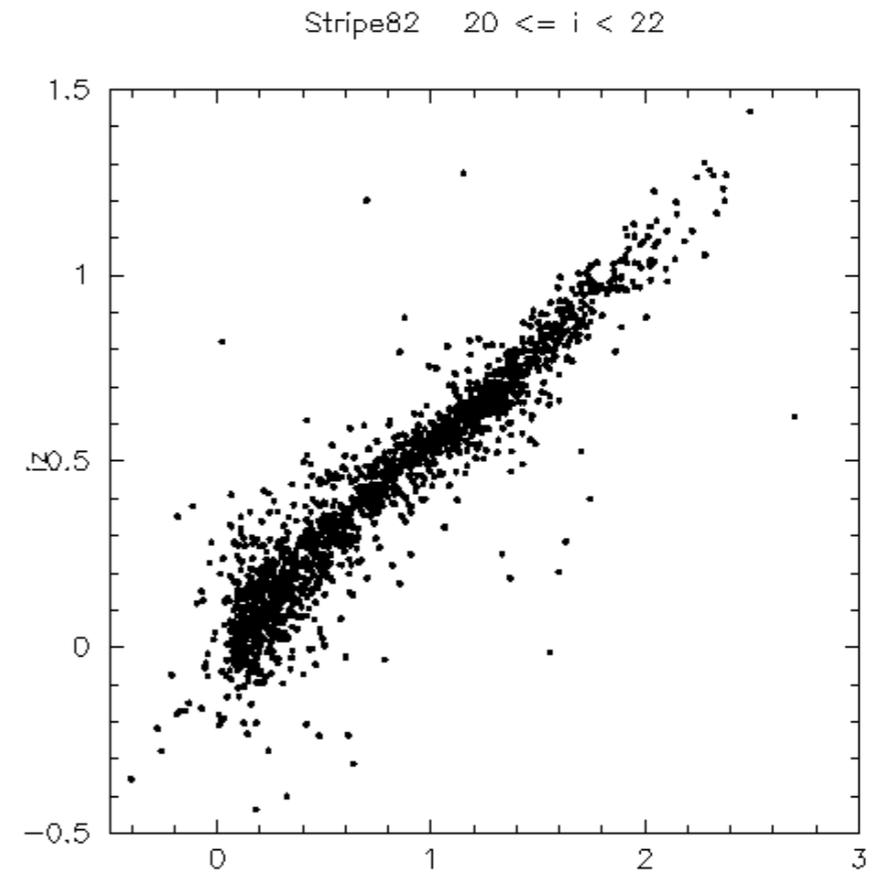
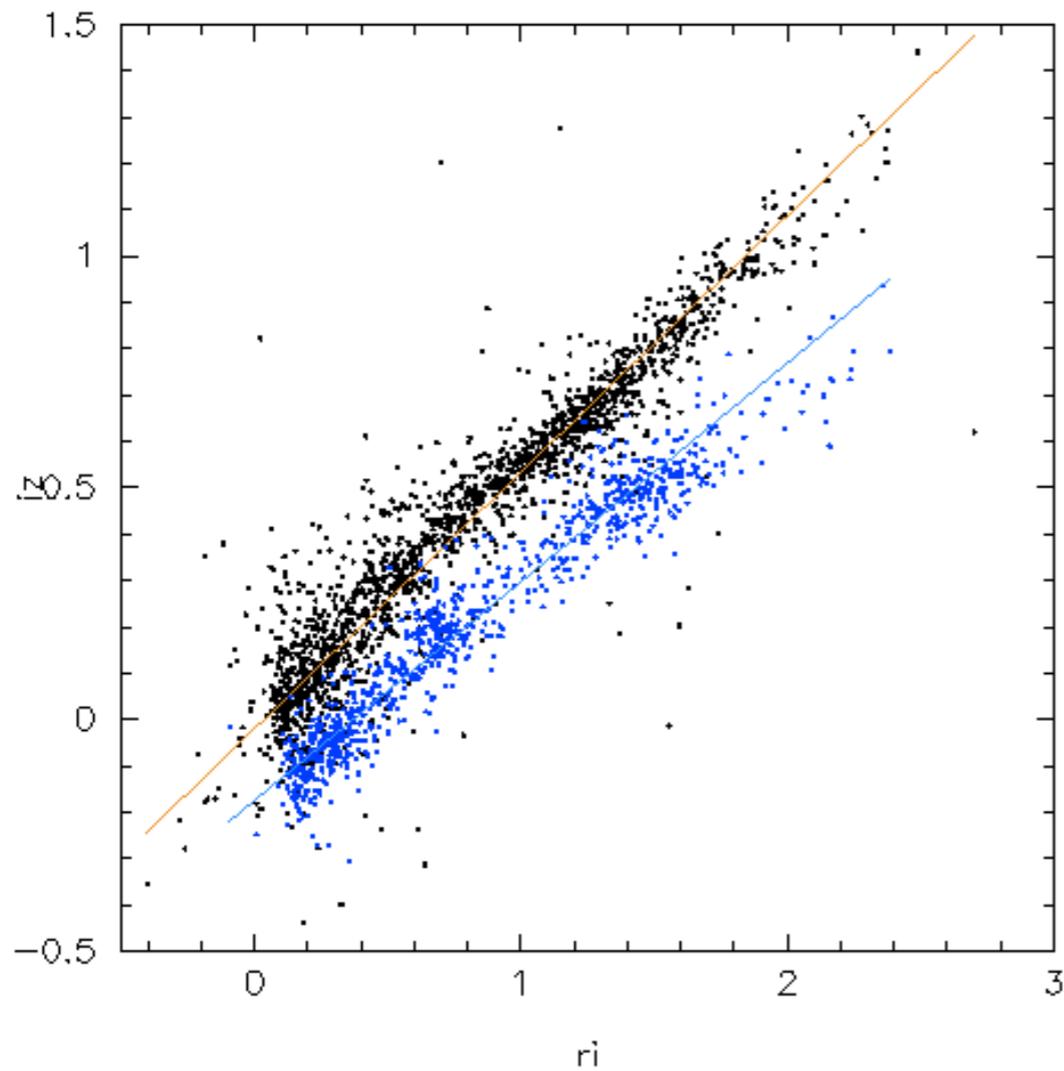
DARK ENERGY
SURVEY

Stellar locus: $r-i/i-z$ *mag_aper<0>*

The sigma-clipped mean, sigma about the SDSS data at $20 \leq i < 22$ and $0 \leq r-i < 3.0$ and $-0.5 \leq i-z < 1.5$:

mean = 0.00125

$\sigma = 0.071$

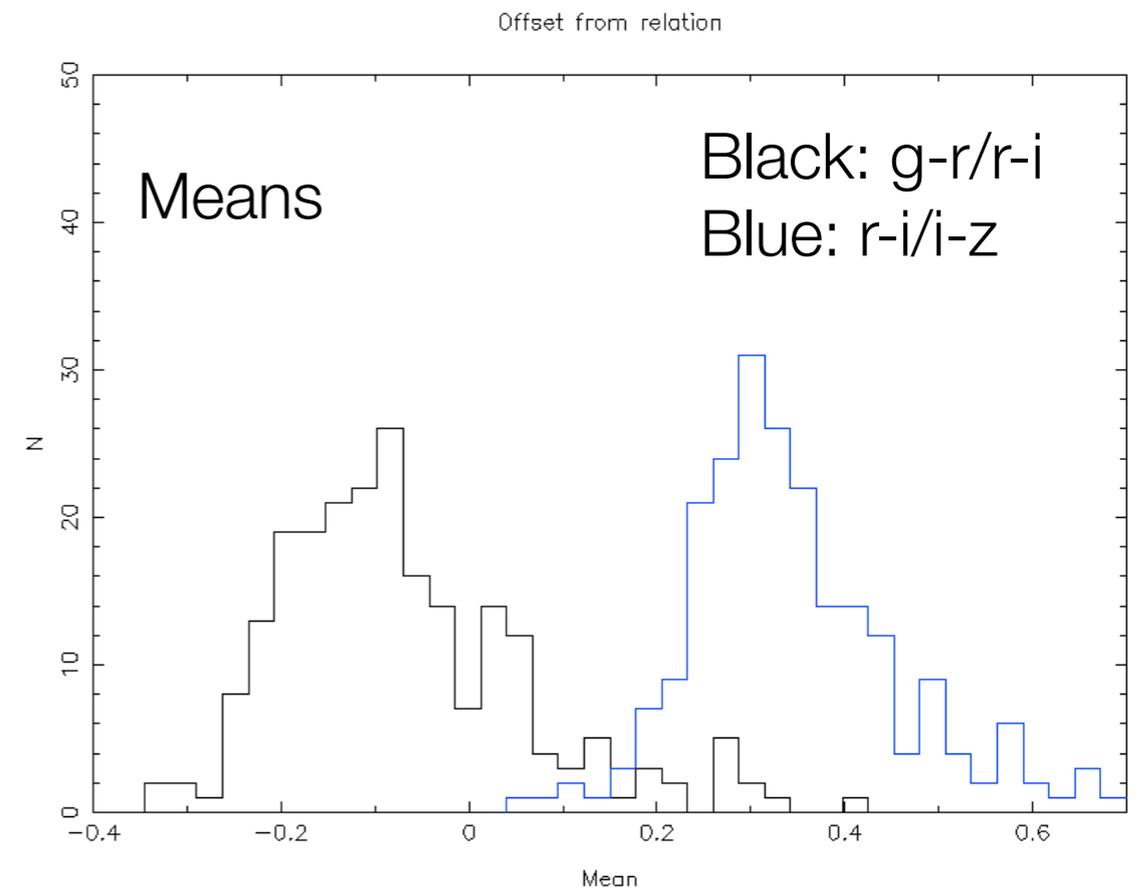
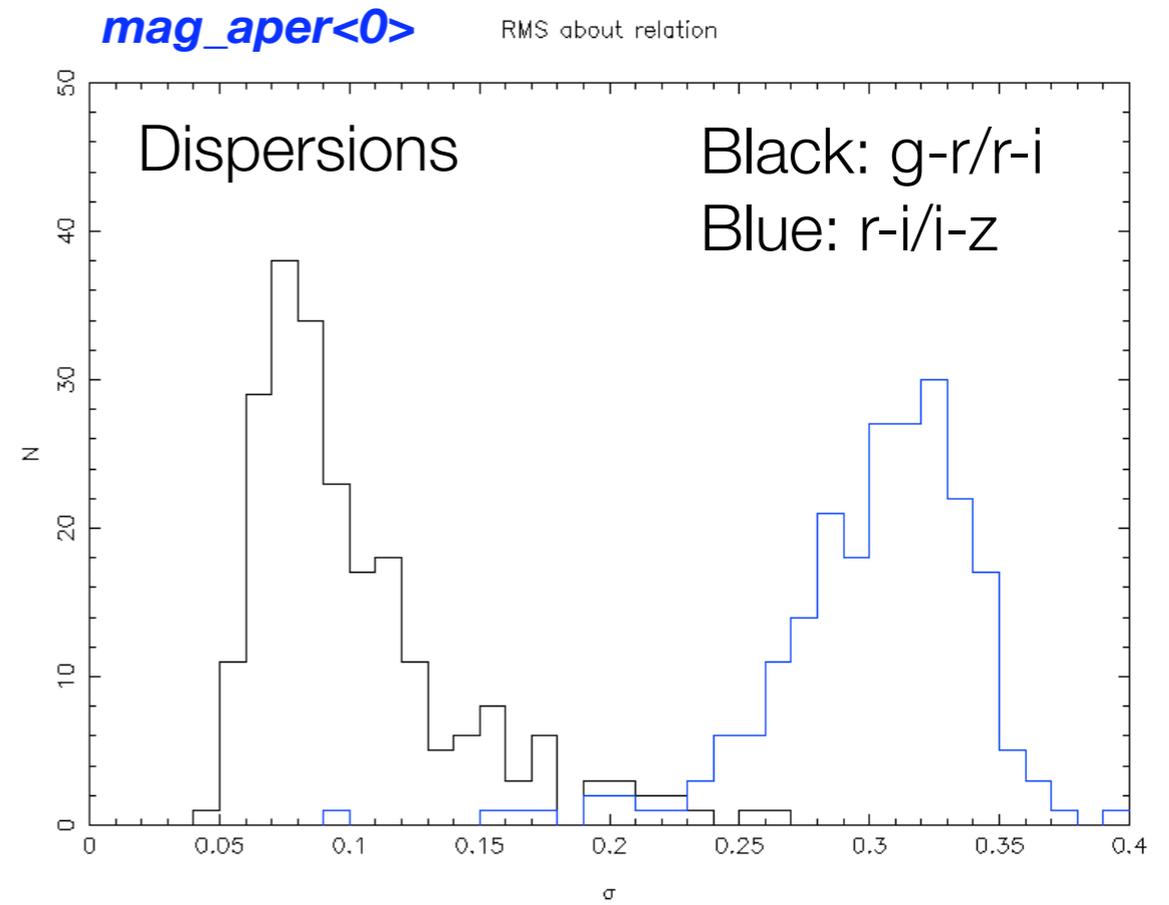




DARK ENERGY
SURVEY

Statistics of the stellar loci

1. 223 tiles measured relative to fiducial fit.
2. The mean of the variance about the fit is measurement scatter, both instrumental and software.
 - mean g-r/r-i $\sigma = 0.10$
 - mean r-i/i-z $\sigma = 0.30$
3. The variance of the means is the calibration scatter.
 - $\sigma(\text{g-r/r-i}) = 0.13$
 - $\sigma(\text{r-i/i-z}) = 0.12$





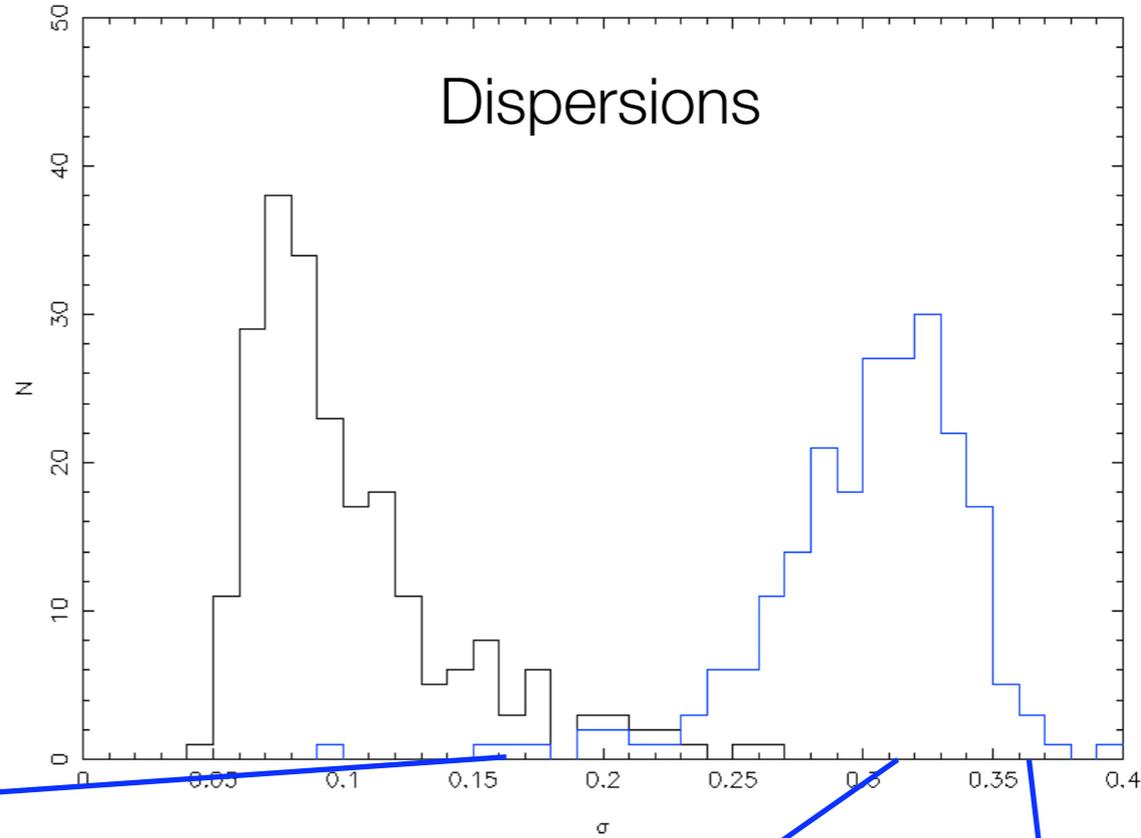
DARK ENERGY SURVEY

Variance: noise

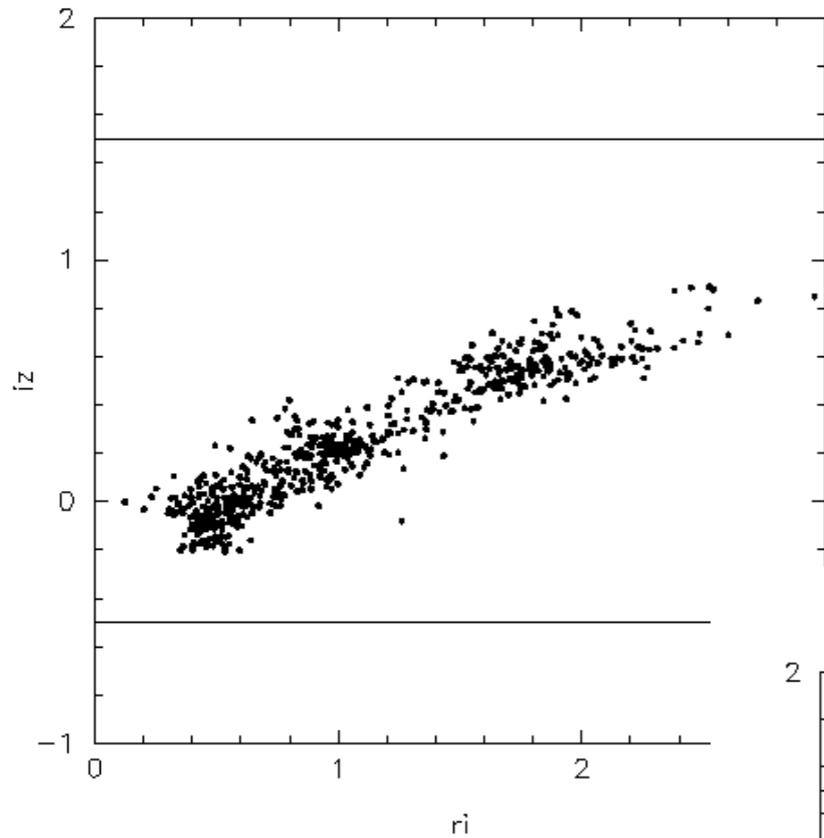
mag_aper<0>

RMS about relation

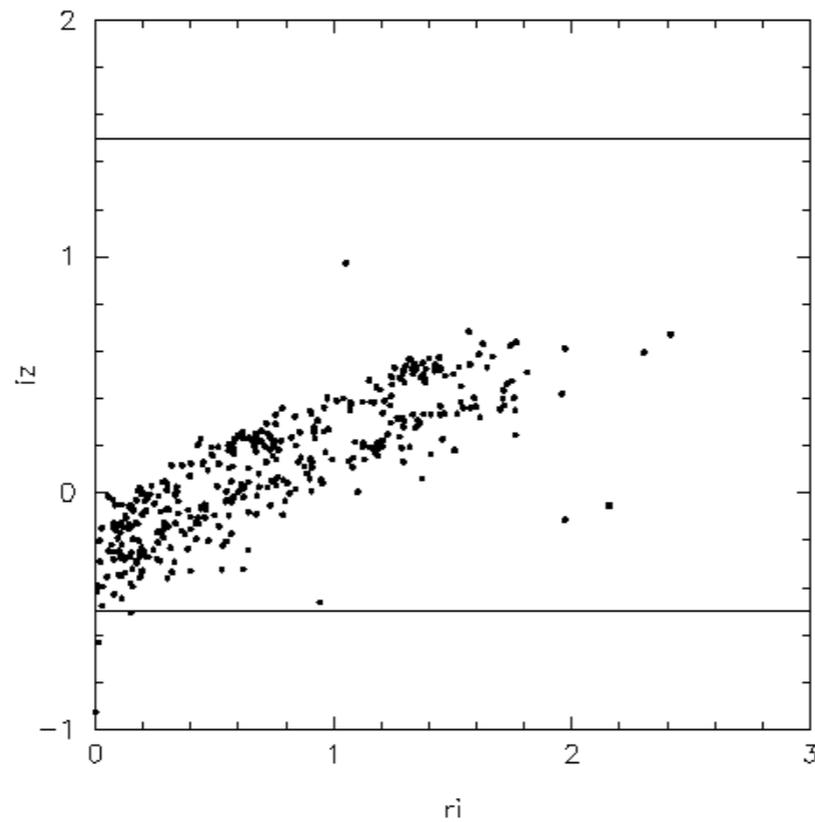
Dispersions



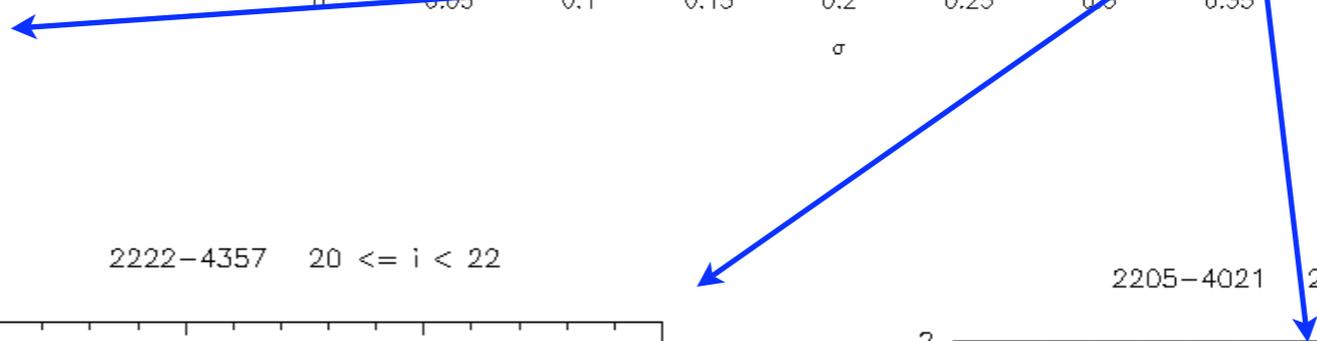
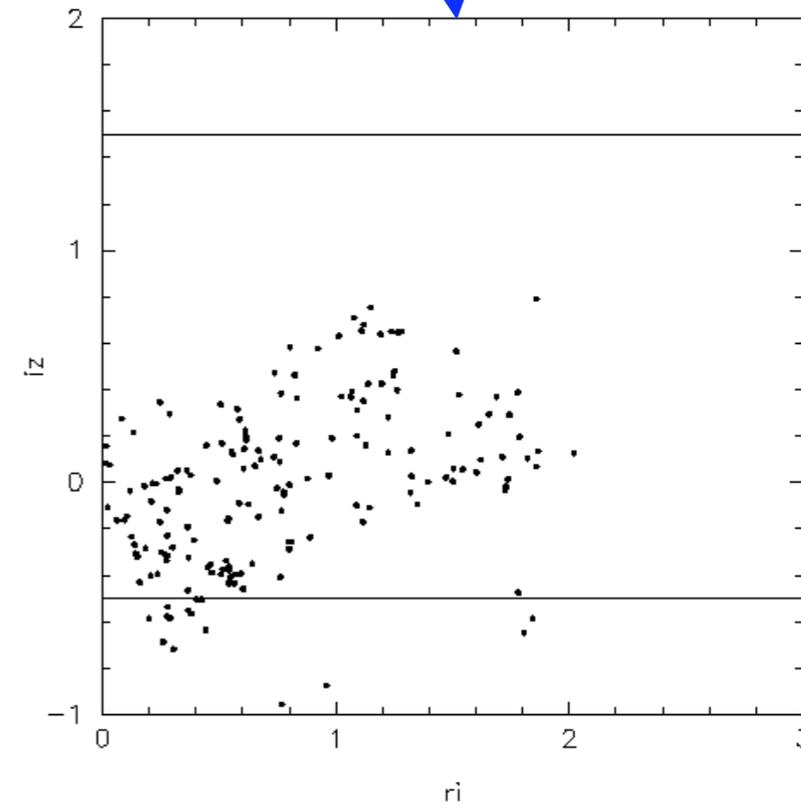
2234-3229 $20 \leq i < 22$



2222-4357 $20 \leq i < 22$



2205-4021 $20 \leq i < 22$



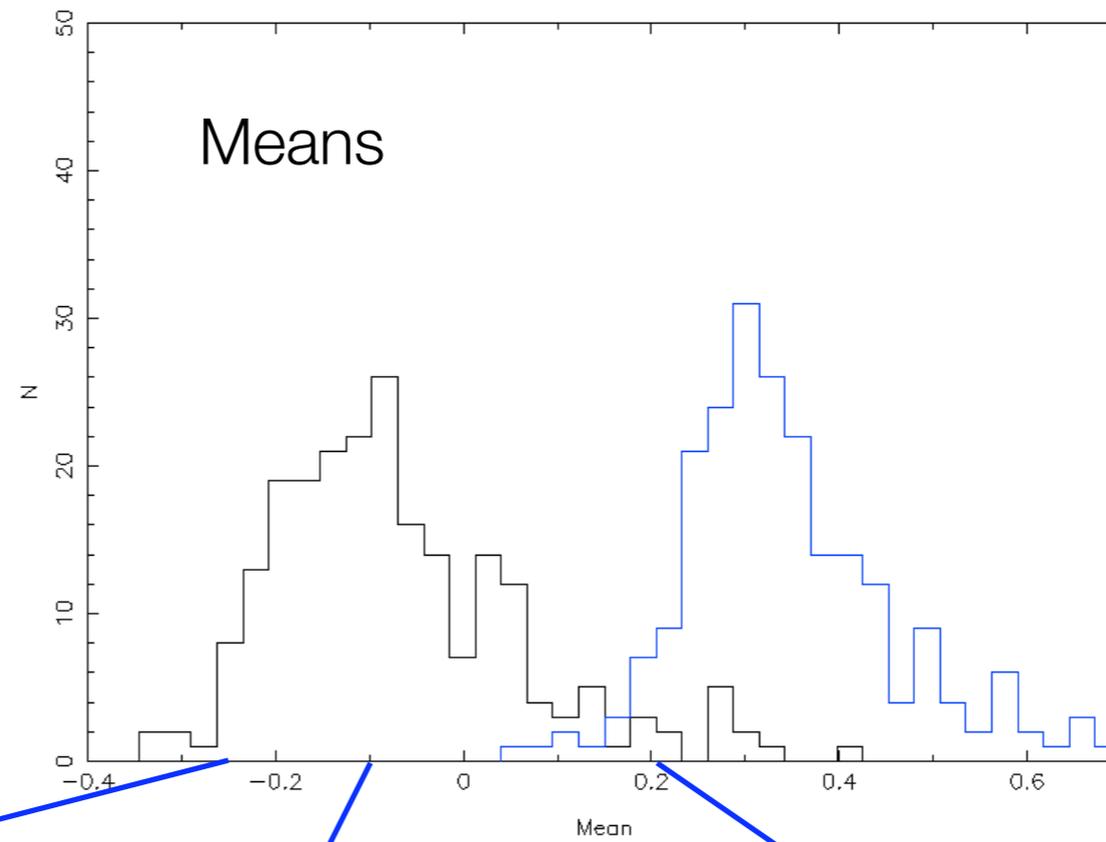


DARK ENERGY SURVEY

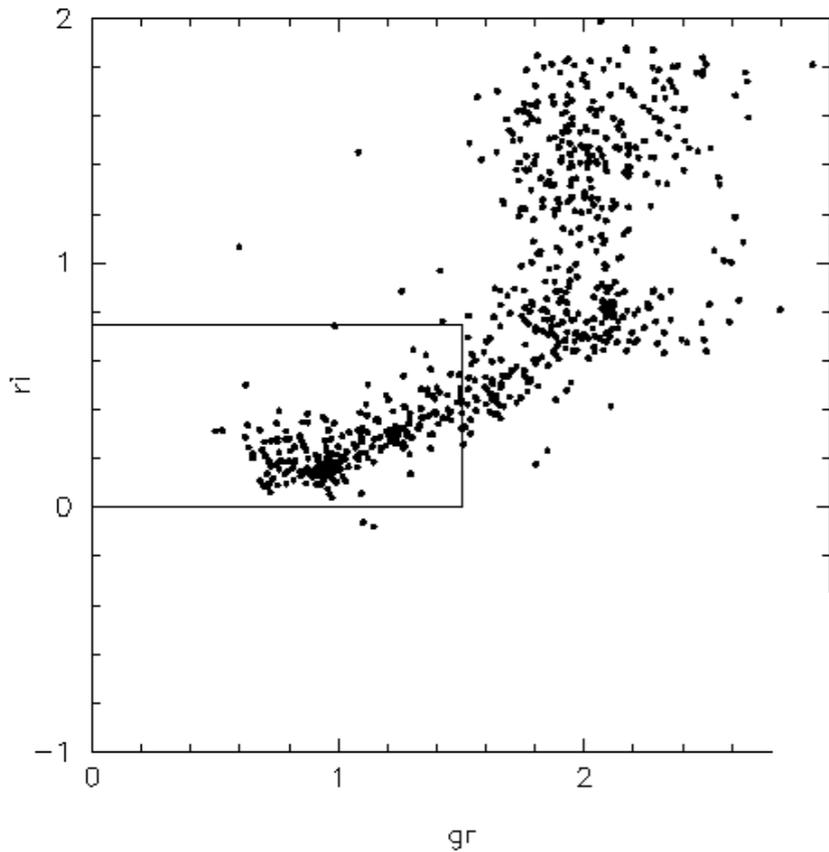
Means: calibration

mag_aper<0>

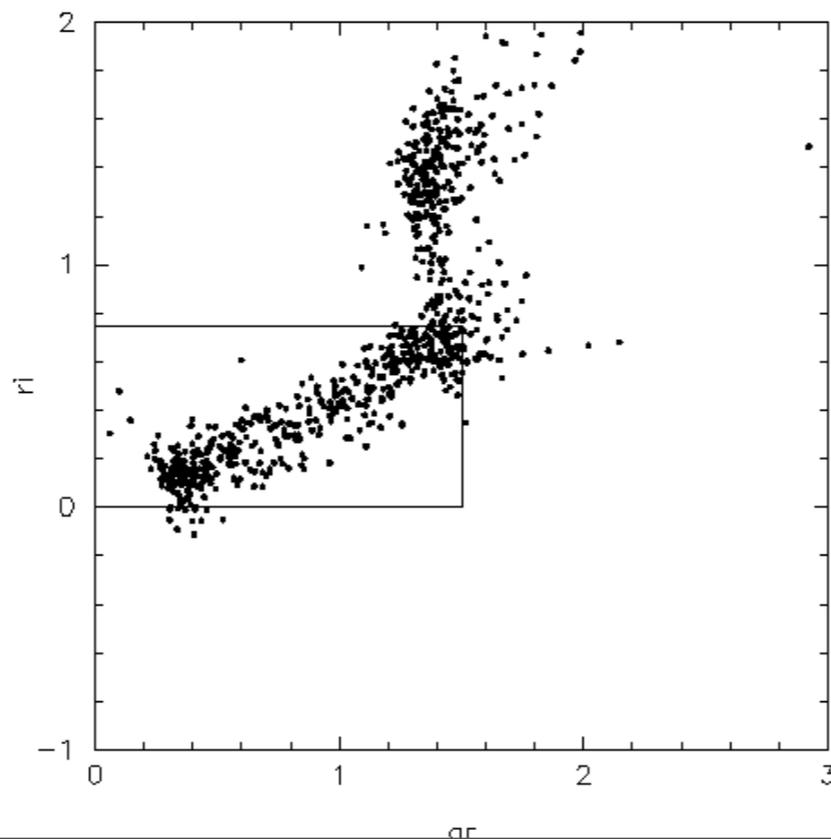
Offset from relation



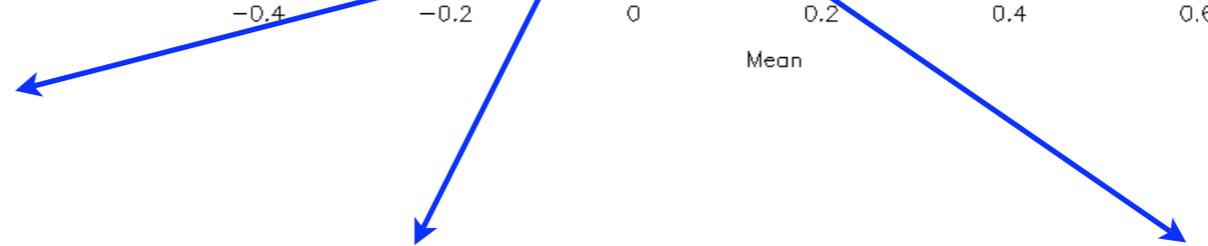
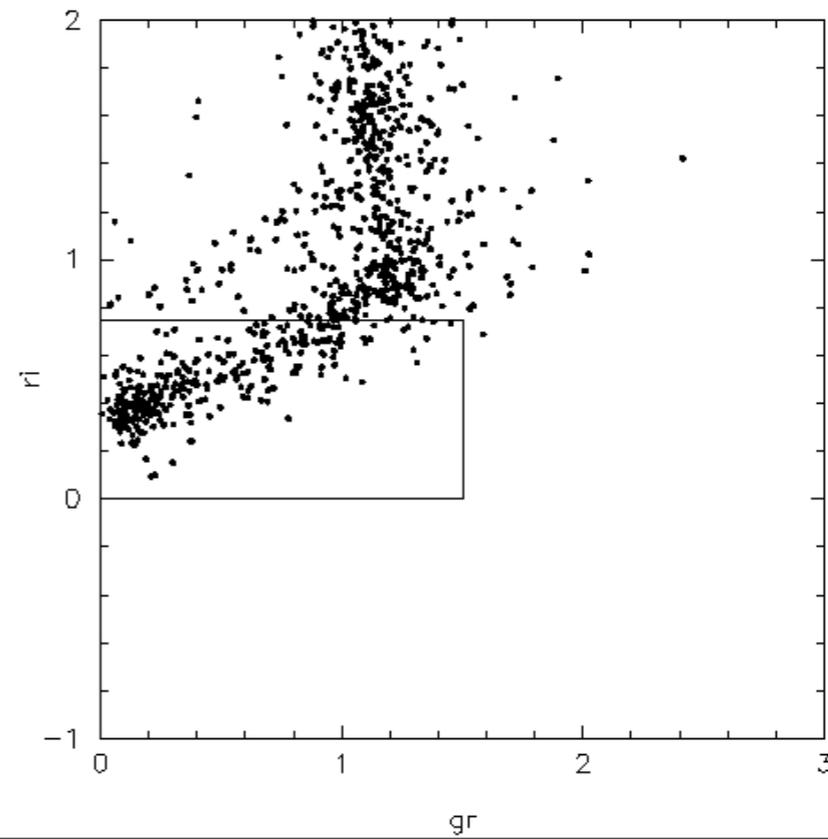
2233-3438 $20 \leq i < 22$



2227-3229 $20 \leq i < 22$



2215-4230 $20 \leq i < 22$



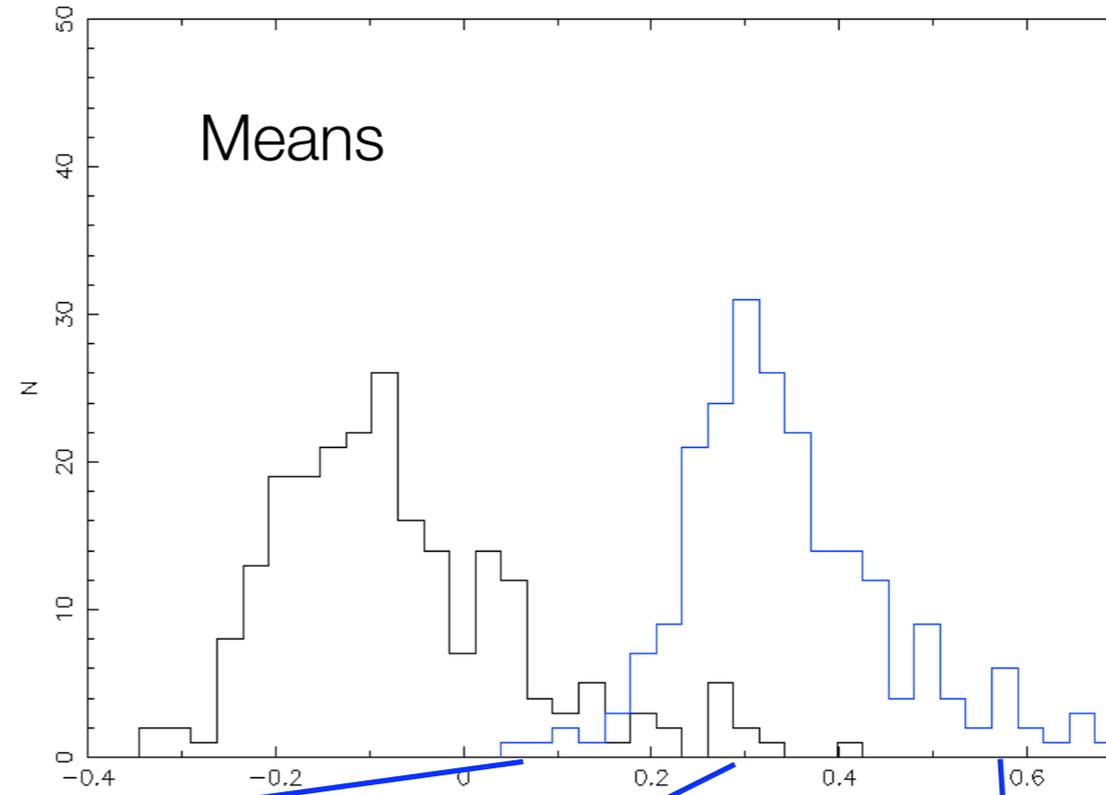


DARK ENERGY SURVEY

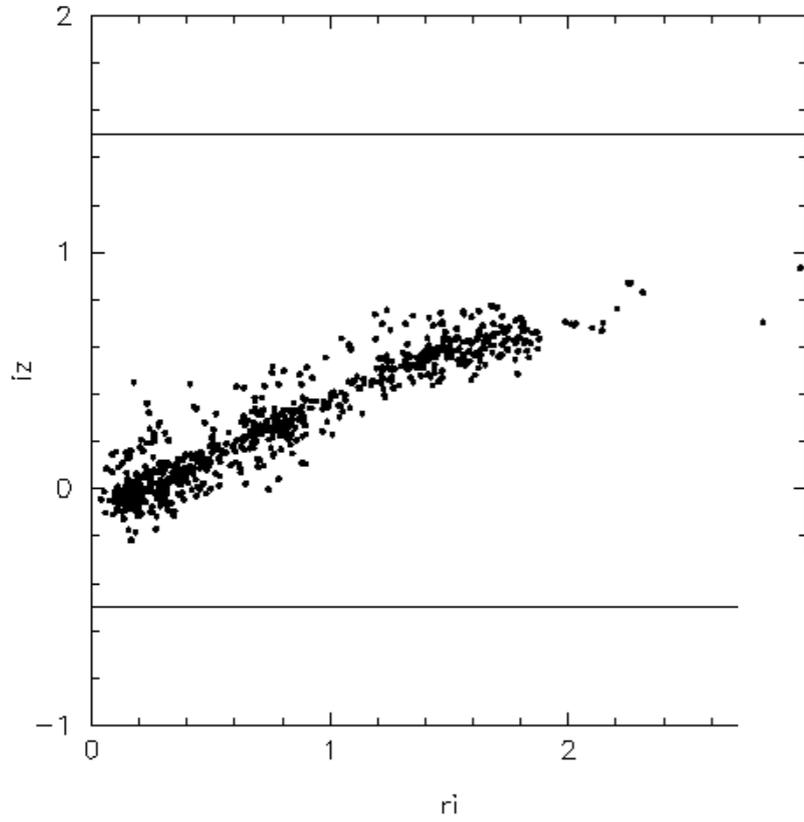
Means: calibration

$mag_aper<0>$

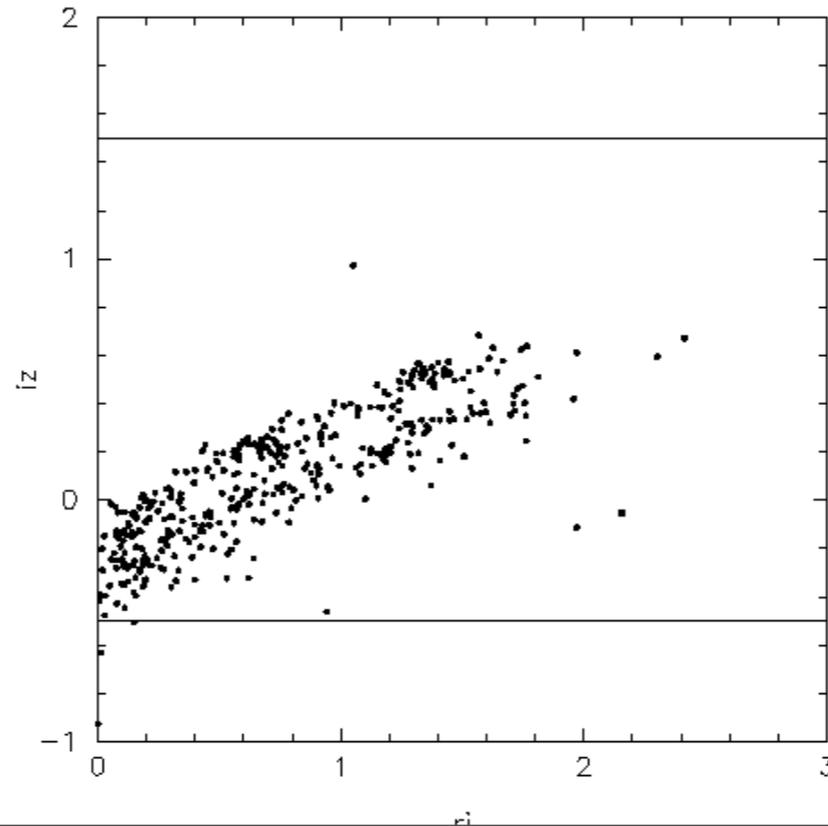
Offset from relation



2233-3438 $20 \leq i < 22$



2222-4357 $20 \leq i < 22$



2234-3229 $20 \leq i < 22$

